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Vol. XCIX.

TELEPHONE: CENTRAL 3617
TELEGRAMS: "CHEMICUS,
CANNON, LONDON" (2 Words)

No. 2270.

The Sure Summer Seller—

"Torch" Brand Health Saline

A well granulated
Effervescing Saline
attractively packed in enamelled tins

RETAILS (P.A.T.A.) at 9d. and
1/4 per tin.

9d. tins	-	5/6 per doz.
1 gross lots	-	5/3 "
1/4 tins	-	10/- "
1 gross lots	-	9/6 "

Carriage paid on £5 net orders.

5% discount on direct orders
to the value of £10 in one con-
signment exclusive of packages.

45%
PROFIT

Allen & Hanburys Ltd
Bethnal Green, London, E.2



WRIGHT, LAYMAN & UMNEY, LTD.

Effervescent Preparations.

Wright's Effervescent Fruit Saline.

An alluring display of luscious fruits, in their natural colours, is artistically represented on labels and cartons.

The Saline is in small grains, pours freely from the bottle, and gives prolonged effervescence. It is a product of the highest standard of excellence.

Minimum Retail Price **1/9** per bottle.
Per dozen **14/6**

The following are a few selections from our Illustrated Catalogue. Many styles of label and carton are available.

Universal Grape Saline
Effervescing Saline
Effervescent Universal Saline
Granular Effervescent Citrate of Magnesia
Effervescent Health Salt
Invigorating Health Salt
Hygeia Salt
Phosphorised Liver Salt
Effervescent Liver Saline
Effervescent Sulphur Saline
Artificial Carlsbad Salts
&c., &c., &c.

Customer's name and address printed on labels without charge, for usual quantities.

Pharmacists are strongly advised to hold supplies slightly in excess of immediate requirements, in order to avoid possible risk of delay during sudden spells of hot weather.

As the demand for effervescing salines invariably continues throughout the holiday season, ample time remains for the disposal of stock.

Wright's Liver Granules.

The Sparkling Morning Draught.

However efficacious they may be, the brackish flavour of the aperient mineral salts is objectionable to everybody.

It is hardly possible to devise a more agreeable method of administration than is offered in
WRIGHT'S LIVER GRANULES.

The flavour is both pleasing and refreshing.

The design of the lever lid tin is quiet but attractive, with convincing letterpress.

Minimum Retail Price **8½d.**
Per dozen **6/-**

WRIGHT, LAYMAN & UMNEY, LTD.

SOUTHWARK, LONDON, S.E.1

Another summer winner in the "Wigglesworth Way"

It was first "tried out" in a town where trade is said to be very bad.

For three weeks in June it was given space in the window.

So far the sales have reached five gross—at this one shop.

The line is NEW—to our knowledge no other house packs it.

If you sometimes wish you had a Wine Licence you in particular cannot afford to miss writing for a sample.

A p.c. (don't forget your label) posted now, will bring it together with all details and a photograph of the display by return, if somebody in your district hasn't forestalled you.

WIGGLESWORTH, LTD.

Makers of Packed Pharmaceutical Specialities,

WESTHOUGHTON - - LANCs.

3 MORE DAYS ONLY

Just state on a postcard the number of offer or offers required and quantities of White, Cream, Flesh, Pink and Brunette, also colour in which the bonus is desired. With all parcels free samples, dinkie "Swan and puff" cut-outs, and the new wonder showcards will be supplied. All orders carriage paid home. *But that post card must be posted right away.*

To seize one or more of the exceptional Swandown offers—3 more days to July 31st to buy all your resources will permit. Three days only to secure a big extra profit on nationally advertised Swandown with a sale as certain as the sun rises and sets each day. Don't miss the chance.

Thousands from city, town, village and hamlet have grasped this opportunity, and yet at this eleventh hour there are still a few who either mislaid the folder sent them, or failed to note our Swandown page.

Reader, if you are one, lose no time in getting that post card away now—if it arrives later than 1st proximo your only chance is lost—a business tragedy indeed!

All who received "Stepping Stones to Beauty" or "Fan, Puff and Swan" showcards speak eulogistically of their artistic merit and business-compelling power. Are you going to miss these, too? Surely not!

Swandown

OFFER No. 1

	Cost Price.	P.A.T.A. Sale Price.
2 gross Swandown at 96/- per gross	£9 12 0	£14 8 0
Less 7½% discount	0 14 5	—
For window display:—2 doz. Swandown, free	—	1 4 0
200 samples, including 2 display cards and 24 small show cards, free	—	—
	£8 17 7	£15 12 0
Less Cost	—	8 17 7
Profit	—	£6 14 5

Profit
76%

OFFER No. 2

	Cost Price.	P.A.T.A. Sale Price.
1 gross Swandown at 96/- per gross	£4 16 0	£7 4 0
Less 5% discount	0 4 9	—
For window display:—1 doz. Swandown, free	—	0 12 0
100 samples, including 1 display card and 12 small show cards, free	—	—
	£4 11 3	£7 16 0
Less Cost	—	4 11 3
Profit	—	£3 4 9

Profit
71%

OFFER No. 3

	Cost Price.	P.A.T.A. Sale Price.
6 dozen Swandown at 8/- per dozen	£2 8 0	£3 12 0
Less 2½% discount	0 1 2	—
For window display:—½ doz. Swandown, free	—	0 6 0
50 samples, including 1 display card and 6 small show cards, free	—	—
	£2 6 10	£3 18 0
Less Cost	—	2 6 10
Profit	—	£1 11 2

Profit
66%

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WRITE THE P/C
AND POST IT
NOW

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Bentley's

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VIENNA, 1883 CHICAGO, 1893

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"ZINYL" BRAND (Regd.)

☞ This Synthetic Otto is a useful basis for Eau de Cologne used in the proportion of $\frac{3}{4}$ oz. to the gallon of spirit, being equal to a concentration of 220 times, or about five times stronger than ordinary "Concentrated Perfumes."

☞ To-day's price of this Otto is only 10/- per oz. and 5 drachms of the Synthetic Neroli are equal to one ounce of natural oil.

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☞ Our Synthetic Ottos are wonderfully economical in the manufacture of all toilet preparations.

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122 GREAT SUFFOLK ST., LONDON, S.E.1

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GREEN
EXTRACTS, &c.

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„ HYOSCYAMI (1st Year)
FOL. HYOSCYAMI (Bienn. 2nd Year)
„ BELLADONNÆ ELECT

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A liquid application for tender and hot feet. No bathing necessary.

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10 " " - - - 14/6 " "

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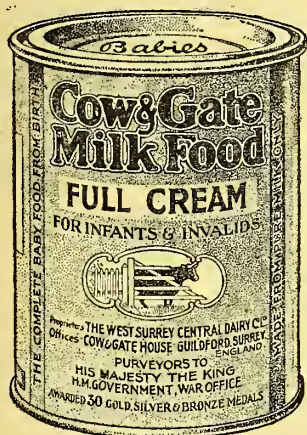
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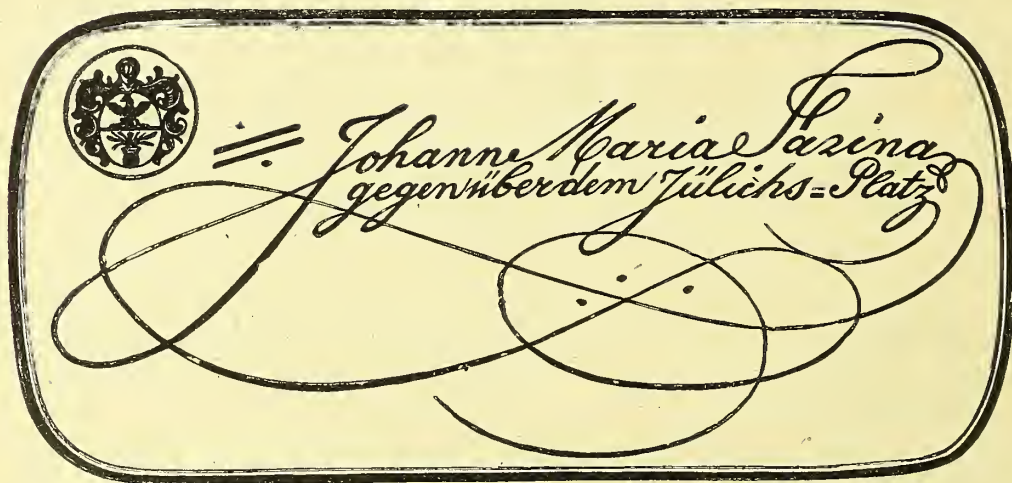
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OF

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No. 01—Short White Bottle (1 oz.)...	2/6	No. 4—Small Wicker Bottle (6 oz.)...	12/6
No. 0—Watch Flasks ... (2 oz.)...	4/6	No. 5—Medium " " (12 oz.)...	25/-
No. 1—Short White Bottles (2 oz.)...	4/6	No. 6—Large " " (24 oz.)...	50/-
No. 2— " " " (4 oz.)...	8/6		

Every Chemist should send an Order, we pay Carriage.

For Prices and Highly Advantageous Terms apply :

BLACKALLER & PLEASANCE

8 LAURENCE POUNTNEY HILL : : LONDON, E.C.4.

BRIDGE
BRAND

Pharmaceutical & Photographic Products

(WHOLESALE QUANTITIES ONLY)

Acetanilid
Acetic Acid
Acetyl Salicylic Acid
Acetone
Aethocaine
Amidol
Amidopyrin
Amidopyrin Salicylate
Barbitone
Benzoic Acid
Benzamine Hydrochlor
Benzamine Lactate
Benzo-Naphthol
Beta-Naphthol
Bismuth Salts
Bromides
Caffeine Pure
Calcium Lactate
Calomel
Chloral Hydrate
Cinchonine and Salts
Cinchonidine and Salts
Citric Acid
Cocaine and Salts
Corrosive Sublimate
Coumarin
Cream/Tartar
Creosote
Creosote Carbonate
Eucalyptus Oil
Formaldehyde

Gallic Acid
Glycerine
Glycerophosphates
Guaiacol and Salts
Heliotropine
Hexamine
Hornatropin and Salts
Hydroquinone
Ichthyol Substitute
Kelene
Lactic Acid
Lanoline
Lecithin
Lemon Oil
Lithia Carbonate
Mercurials
Methylene Blue Medicinal
Methyl Salicylate
Methyl Sulphonate
Milk Sugar
Oxalic Acid
Pancreatin
Paraldehyde
Peppermint Oil
Pepsine
Peptone
Phenacetin
Phenazone
Phenolphthalein
Piperazine
Potassium Binoxolate

Potassium Chlorate
Potassium Permanganate
Potassium Sulphoguaiacolate
Pyrogallie Acid
Quinidine and Salts
Quinine and Salts
Quinine Ethyl Carbonate
Quinoidine
Resorcin
Rhodol (Equivalent to Metol)
Saccharin
Safrol
Salicylates
Salipyrin
Salol
Soda Benzoate
Soda Hyposulphite
Soda Sulphite Anhydrous
Sugar/Lead
Tannic Acid Leviss
Tannin Albuminate
Tartaric Acid
Terpine Hydrate
Terpineol
Theobromine and Salts
Thymol Crystals
Titanium White
Tropacocaine and Salts
Vanillin
Zinc Oxide
Zinc Phosphide

R. W. Greeff & Co. Ltd.

Thames House Queen Street Place London E.C.4

Telephone 6550 City
(8 LINES.)

MANCHESTER BRANCH
PALATINE BANK BUILDINGS
10, NORFOLK STREET.
TELEPHONE CITY 5706/5707

NEW YORK AGENTS
R. W. GREEFF & CO. INC.
78, FRONT STREET.

"FARRIS'S"

is the Real Old-fashioned Air-Bleached

GENUINE BEESWAX

ABSOLUTELY PURE and ABSOLUTELY SNOW WHITE.

"FARRIS'S" GENUINE YELLOW BEESWAX

is carefully refined and entirely free from dross of any kind.

In slabs about 10 lb. each, also 1-lb., 4-oz., 2-oz., & 1-oz. rounds.

Celebrated for excellence and purity for upwards of three-quarters of a century.

FARRIS'S SPECIALLY REFINED PURE SPERMACETI,
 Refined **MONTAN WAX** (the old-fashioned kind). **STEARIC ACID, CERASINE**

ALSO WAXES & OILS OF EVERY KNOWN KIND & FOR EVERY PURPOSE.

The only actual Manufacturing Wax Chandler in the City of London

Helmet Court, Wormwood Street, Bishopsgate, London, E.C. 2.
 (Entrance also between 77 & 79 BISHOPSGATE).

IMPORTANT NOTICE.

CROOKES' COLLOSOLS—EXPORT

THE CROOKES LABORATORIES are now in a position solely to supply all requirements for Crookes' Collosols in Foreign and Colonial Markets.

All supplies of these valuable preparations will in future only be manufactured at the address given below, and none are genuine unless bearing the name of The Crookes Laboratories.

Particulars as to Agency terms will gladly be sent on request.

Telephone :
 MUSEUM 3663—3697.

Telegrams :
 "COLOSSALLY, WESTCENT,
 LONDON."

Corlton's

THE CROOKES LABORATORIES

22 CHENIES STREET,
 TOTTENHAM COURT RD., LONDON, W.C.1.

Maw's



Page

Two Sides to the Question of Shaving Brushes

Out of consideration both to your customers and to yourself, you will do well to see that the shaving brushes you sell are made by the House of Maw. Maw's shaving brushes embody all the qualities that the discriminating customer will demand, and conform to all the conditions required by the chemist who has a careful eye on profits and reputation.

Points for your Customer.

1. Every Maw's shaving brush carries a printed Guarantee of quality.
2. Every Maw's shaving brush is sterilized by an improved process which removes all risk of infection.
3. A Maw's shaving brush cannot shed its hairs. The hair runs right down into the handle, and a special process of cementing is used which fixes each hair with rock-like security for all time.
4. Maw's shaving brushes are the product of a firm of actual manufacturers with a splendid reputation for quality to sustain. Skilled handcraftsmanship and painstaking supervision are employed in every stage of their making.

Points for You.

1. Maw's shaving brushes are made in a wide variety of patterns which enable you to please all your customers.
2. When you sell a Maw's shaving brush you know that you must, because of the splendid quality of the brush, give complete satisfaction to your customer and thus enhance your goodwill.
3. Maw's shaving brushes are supplied at a price which allows you to meet competition and still secure a fair profit.
4. Maw's brushes, by virtue of the selling arguments mentioned above, are easy to sell. A Maw's shaving brush is a really good article which merits your strongest recommendation by its appearance and performance.

When you order shavers—order Maw's.

S. Maw, Son & Sons Ltd.
Aldersgate St., London.
and Barnet.

Telephone
City 7
Private
Branch
Exchange

Telegrams
Eleven
Cent
London



Cables
Eleven
London

Code
A.B.C.
4th & 5th
Edition

Some Reasons Why

The PATENT NECK

makes the "Ronoleke" the only perfectly water tight hot water bottle. The weakest part of the ordinary bottle is the "Ronoleke's" strength.

NO WIRING

to rust and corrode—just solid builtup rubber of great strength. The patent neck has socket lugs embedded in the rubber.

NO WASHERS

to perish or renew. The screw top flange engages with the solid rubber platform—it cannot loosen when screwed.

PRICE RIGHT

There are a variety of sizes in two colours at reasonable prices. There is the right bottle for every one of your customers.

PROFIT RIGHT

A glance below will show you that the "Ronoleke" profits are good—just as good as the bottle itself in fact.

Stock "Ronoleke." Let us have your order now. £5 orders and over less 5% plus a further 5% for prompt cash.

"Stock the RONOLEKE"

THE BEST RUBBER HOT WATER BOTTLE

Everything should have its reason. When asked to take a certain step a man will, if he be wise, expect a good reason to accompany the request. Therefore, when we say "Stock Ronoleke" we tell you why you should do so, just as we substantiate our statement that it is the best rubber hot water bottle.

Of all reasons, the profit is undoubtedly the most important. The profit on "Ronoleke" is very good alone. When the result of each sale is considered it is wonderful. For every sale means another satisfied customer, a permanent customer, and one who will invariably recommend the "Ronoleke" and your business.

Then the patent neck—a unique feature. And after all if a hot water bottle is proved water tight, as the "Ronoleke," there is really nothing better that could be said about it, since that is mainly the secret of hot water bottle perfection.

*Sales are being
made for you!*

Once again we are broadcasting the "Ronoleke" message—this time is an even more extensive matter than last year. Our advertising campaign will bring potential customers right to your window. Stock "Ronoleke" and display—they'll buy from you when they see that you stock

SUPER RED DRAB

Size	Wholesale Prices	Retail Prices	Wholesale Prices	Retail Prices
8×10	6/-	9/-	4/8	6/6
8×12	6/8	10/-	5/3	7/-
10×12	7/8	11/6	6/-	8/-

from

WHOLESALE & SUNDRIESMEN, ETC.



Calf-Lymph

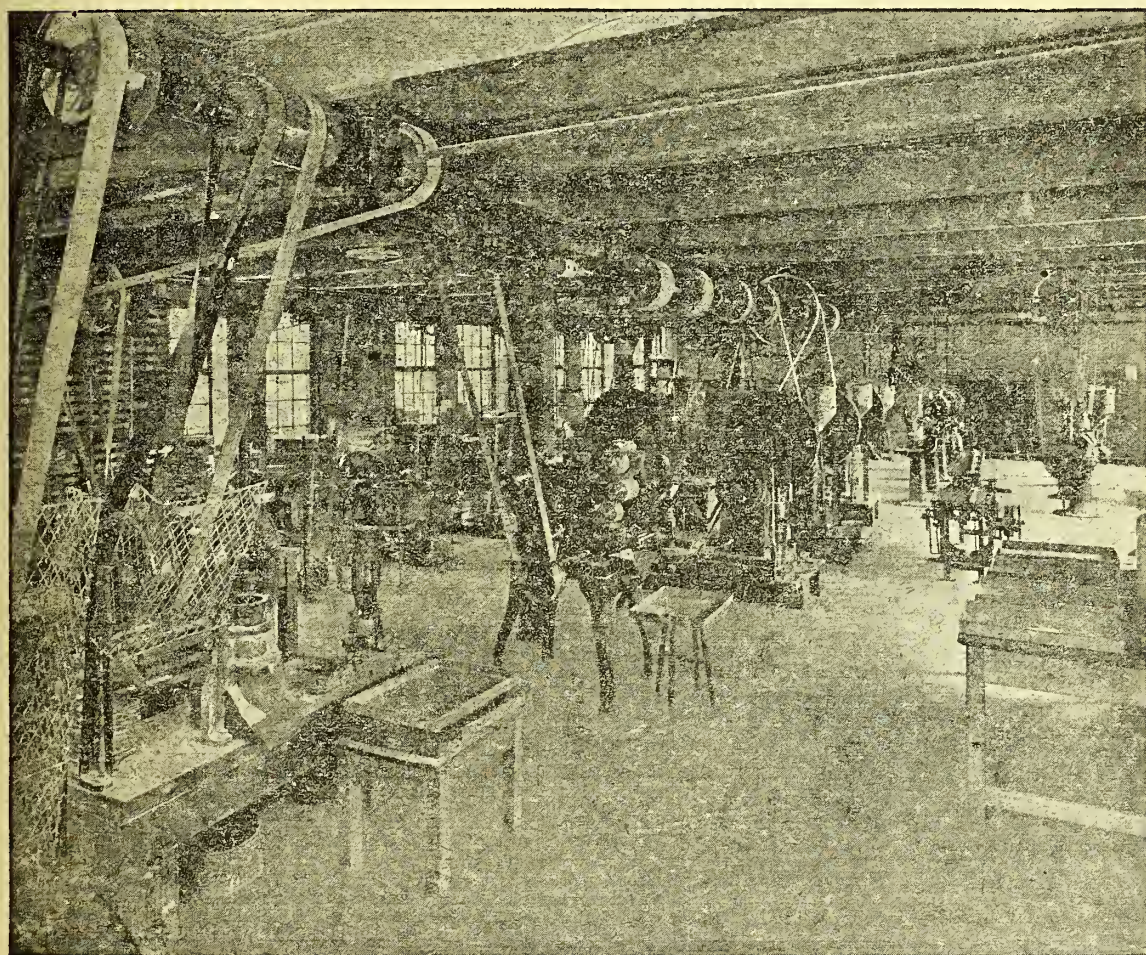
Every batch of Glycerinated Calf Lymph manufactured at our Laboratories is tested and guaranteed active before leaving the premises. On account of the up-to-date methods employed in its production it retains its potency for a considerable length of time, providing it is kept in a cool and dark place.

You will receive Lymph manufactured only from the healthiest Calves, and by return of post, if you order from:—

EVANS

EVANS SONS LESCHER & WEBB, LTD.
LIVERPOOL New York LONDON

AYRTON, SAUNDERS & CO., LTD.
for
TABLETS



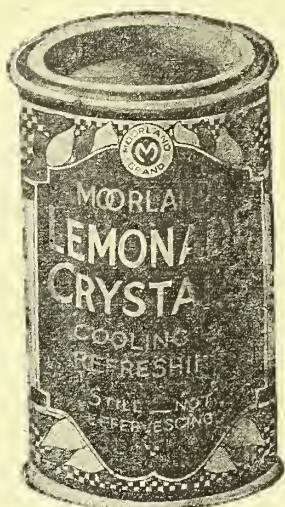
For the next few weeks we purpose using p. 15 of the C. & D. to demonstrate by actual photographs features of the complete "Ayrton" service to the Pharmacist.

*5,000 feet of floor space accommodating batteries of
automatic and rotary machines incessantly producing
the finest made tablets and pills in the trade.*

34 Hanover Street

Telegrams: "Sundries, Liverpool."
Phone - - - Royal 4861.

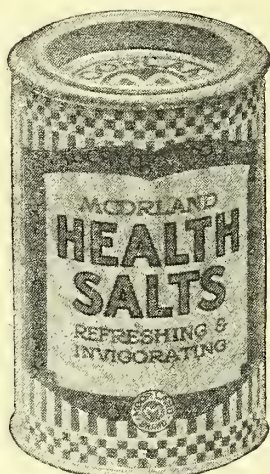
LIVERPOOL



Retail 1/-

SUMMER TIME PROFITS

There's a side of your business which can very easily be extended—that is, hot weather requirements. Chief among these are Summer Drinks and Health Salts: display them regularly and you may be pretty sure of a good response from your public. But let them be Moorland Brand products; you know then that your profits will be every bit as satisfactory as the number of sales, which is saying quite a lot. You know, too, that the get-up of the packs and the show matter will be very easily the finest obtainable.



Retail 10d.

Moorland

Lemonade Crystals

A tartaric acid and granulated sugar product—easy to make and very economical. Packed in bright, air-tight tins. A fine show can be made of these in your window.

Show matter free with every order.

6/6 per dozen. 6/- per dozen gross lots. Retail 1/-

Lemon Squash Powder

ONE PACKET MAKES A PINT, ALREADY SWEETENED. In neat and attractive packets. Selling at 3d. each.

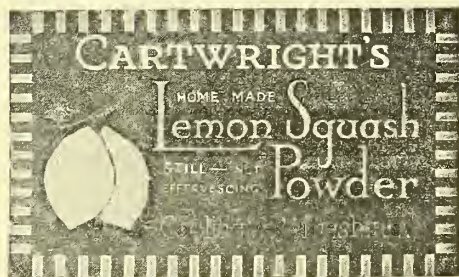
19/- per gross. 18/6 per gross 3 gross lots.

Moorland Health Salts

Packed in well-designed air and water-tight tins; it is a fine salt, always dry and giving a fine effervescence in water. Splendid six-colour show matter is given free with each order.

5/6 per dozen, 5/- per dozen gross lots.

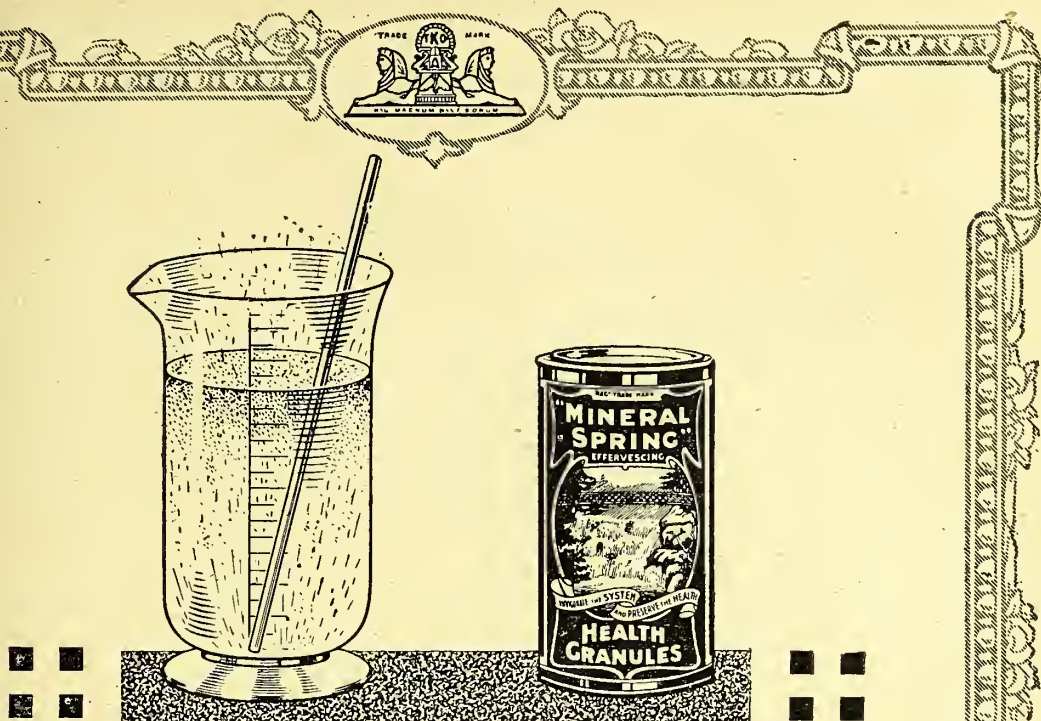
4/6 per dozen 2 gross lots; 4/3 per dozen 5 gross lots.



Retail 3d.



W. B.
CARTWRIGHT, LTD.
RAWDON
Nr. Leeds.



Make this personal test in your Pharmacy of the superiority of **MINERAL** TRADE MARK **SPRING**

MIX a glass of "Mineral Spring" and a glass of your next best saline. Note the longer effervescence of "Mineral Spring," its sparkling clearness and absence of "froth."

Taste the two beverages after the effervescence has subsided—taste them again five, ten, and fifteen minutes after mixing. The continued freshness of "Mineral Spring" will surprise you if you have never made this test before.

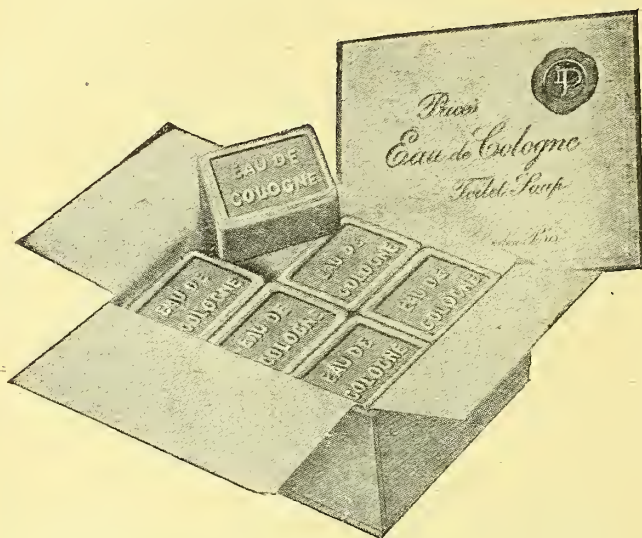
Compare them from any other points of view that occur to you—attractiveness, value to the public, value to the trade, keeping qualities—whatever your line of investigation you must ultimately arrive at one conclusion—the pre-eminence of "Mineral Spring."

In 1/- and 2/- tins (P.A.T.A. min.) trade prices 8/- and 16/- per dozen respectively.

THOMAS KERFOOT & CO. LTD.
BARDSLEY VALE, LANCASHIRE,
& Bardsley House, London, N.1
ESTABLISHED 1797.

COPYRIGHT

PRICE'S NEW INTRODUCTION TO THE 'SQUARES' SERIES



PRICE'S EAU DE COLOGNE TOILET SOAP.

In response to repeated requests we have introduced an addition to our popular "Squares" Series in the form of

PRICE'S EAU DE COLOGNE TOILET SOAP

(as illustrated).

We feel that this addition to a favourite Series will be welcomed.

Eau de Cologne Squares are put up in the wooden boxes in toilet size only.

The prices are identical with those of Old English Lavender.

12-cake boxes - 39/9 a gross.
6-cake boxes - 41/3 a gross.

Details and quotations on application to
PRICE'S, Battersea, S.W.11.

SUPERFLORO

Regd. Trade Mark.

Only firm selling in bulk all the well-known and exclusive high-class perfumes, including—

Chypre, Lorigan, Amber, etc.

TRIPLE EXTRACT guaranteed manufactured from pure alcohol and natural flower essences, at prices below those imported from France.

Natural Essences & Essential Oils
for all Toilet Preparations.

NO SYNTHETIC.

For quotations and samples apply to Sole Concessionaires of

BERENGER FILS
PARIS & GRASSE (Established 1810)

SUPERFLORO, LTD.

5 HANOVER ST., REGENT ST., W.1.

Telephone - - - MAYFAIR 1060.

ESSENCES

HIGHEST CONCENTRATION.

Sole Agents for Gt. Britain and Colonies
FOR

FRIES & BRO. NEW YORK

The World-Renowned Makers of
FIRST QUALITY ESSENCES.

PEACH
APRICOT
HONEY
MAPLE
&c.

Stocks
in
London.

Ask for
Quotations
& Samples.

A. CONNELL & CO.,

20 BEVIS MARKS, LONDON, E.C.3.

Phone: AVENUE 1945. Telegrams: "NITROZONE, LONDON."

Warning to the Trade

PASTILLES VALDA

PASTILVAL, LIMITED, Registered Offices, 15 Great St. Andrew Street, London, W.C.2, have been appointed the SOLE REPRESENTATIVES for the BRITISH EMPIRE (except CANADA) of Monsieur H. CANONNE (27 Boulevard Bourdon, Paris) for the importation and sale of PASTILLES VALDA for the BRITISH EMPIRE (except CANADA).

Repeated complaints have been made recently regarding the supply and sale of PASTILLES VALDA imported into GREAT BRITAIN by unauthorised persons.

NOTICE IS HEREBY GIVEN TO THE TRADE that legal proceedings will be taken against all Firms importing or dealing in PASTILLES VALDA other than that obtained through the authorized source.

PASTILVAL, LIMITED, further give notice that Messrs. WILCOX, JOZEAU & CO., of 15 Great St. Andrew Street, W.C.2, are their Sole Distributors of PASTILLES VALDA for the BRITISH EMPIRE (except CANADA), and the only authorized source through which PASTILLES VALDA may be obtained by the Wholesale and Retail Trade.

Firms holding any stocks of PASTILLES VALDA obtained otherwise than through the foregoing source are hereby notified that upon applying to Messrs. Wilcox, Jozeau & Co., their stock will be exchanged for the legitimate stock—value for value. This offer will hold good for the period of one month from the date of this advertisement, but cannot apply to any goods imported after the **date of this notice**.

The foregoing offer is made by PASTILVAL, LIMITED, in an honest endeavour to allow the TRADE holding illicit stocks of PASTILLES VALDA to relieve themselves of these, and any Firms, Companies or persons who refuse to avail themselves of this offer will render themselves liable to legal proceedings without further warning.

PASTILVAL, LIMITED, request all Firms holding stocks of PASTILLES VALDA to communicate immediately with Messrs. Wilcox, Jozeau & Co., stating the amount of the stock they have on hand for exchange in order that they may avail themselves if necessary of this **FINAL OFFER**.

PASTILVAL, LIMITED, Sole Importers and Agents for the BRITISH EMPIRE (except CANADA) for Monsieur H. CANONNE, PARIS.

15 GREAT ST. ANDREW STREET, LONDON, W.C.2.

July 25th, 1923.



In Green Bottles, Registered.

Frozoclone

REGD.

The Original and Best
SOLID EAU DE COLOGNE

has many imitators but no equal.

Its elegance and utility appeal to all.

Made from the finest Eau de Cologne. Refreshing when rubbed on the forehead, pleasant as a smelling bottle, invaluable in a heated atmosphere and when travelling. A real acquisition to every household. Excellent after shaving. A boon to those in hospital.

Retails at 3s. 6d. Minimum (P.A.T.A.) Per doz. 32/-

SPECIAL TERMS FOR BONDED SHIPMENT OF 4 gross maximum.

SOLID ENGLISH LAVENDER

TERMS AS FOR FROZOCLONE.

Similar size and packing
as "FROZOCLONE"
but in BLUE glass.



THE IDEAL FRUITY LAXATIVE

In Pastille form. Delicious, Reliable, Effective.

Retails at 2s. 3d. minimum. Per dozen 21s.

REDUCED PRICES FOR EXPORT.



THE NAIL POLISH

with new and distinctive features.
Softens the cuticle. Brilliant polish.

Retails 1s. 9d. Per dozen 15s.

R. DEMUTH'S LABORATORIES
68 Salusbury Road, and Montrose Avenue, London, N.W.6



TRADE MARK

Warning to the Trade

CACHETS FAIVRE

(OXYQUINOTHÉINE)

P. BASSET (LONDON), LIMITED, Registered Offices, 15 Great St. Andrew Street, London, W.C.2, have been appointed the SOLE REPRESENTATIVES in Great Britain, Free State of Ireland and Canada of LABORATOIRE P. BASSET, LYON-TASSIN, FRANCE, for the importation and sale of CACHETS FAIVRE in GREAT BRITAIN, FREE STATE OF IRELAND AND CANADA.

Repeated complaints have been made recently regarding the supply and sale of CACHETS FAIVRE imported into GREAT BRITAIN by unauthorized persons.

Notice is hereby given to the Trade

that legal proceedings will be taken against all Firms importing or dealing in CACHETS FAIVRE other than that obtained through the authorized source.

P. BASSET (LONDON), LIMITED, further give notice that Messrs. WILCOX, JOZEAU & CO., of 15 Great St. Andrew Street, W.C.2, are their Sole Distributors of CACHETS FAIVRE in Great Britain, Free State of Ireland and Canada, and the only authorized source through which CACHETS FAIVRE may be obtained by the Wholesale and Retail Trade.

Firms holding any stocks of CACHETS FAIVRE obtained otherwise than through the foregoing source are hereby notified that upon applying to Messrs. Wilcox, Jozeau & Co., their stock will be exchanged for the legitimate stock, value for value. This offer will hold good for the period of one month from the date of this advertisement, but cannot apply to any goods imported after the **date of this notice**.

The foregoing offer is made by P. BASSET (LONDON), LIMITED, in an honest endeavour to allow the TRADE holding illicit stocks of CACHETS FAIVRE to relieve themselves of these, and any Firms, Companies or persons who refuse to avail themselves of this offer will render themselves liable to legal proceedings without further warning.

P. BASSET (LONDON), LIMITED, request all Firms holding stocks of CACHETS FAIVRE to communicate immediately with Messrs. Wilcox, Jozeau & Co., stating the amount of the stock they have on hand for exchange in order that they may avail themselves if necessary of this FINAL OFFER.

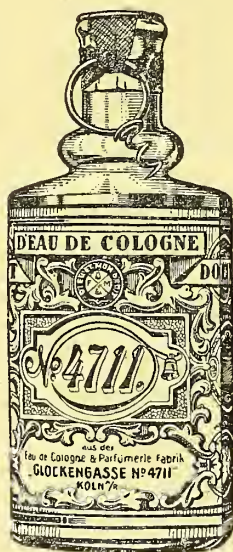
P. Basset (London), Limited, Sole Importers and Agents in Great Britain, Free State of Ireland and Canada for Laboratoires P. Basset, Lyon-Tassin, France.

15 GREAT ST. ANDREW STREET, LONDON, W.C.2.

July 25th, 1923.

No. 4711 Eau de Cologne

TAKE NO NOTICE



of certain reports spread by irresponsible people, that supplies of "4711" are not coming forward. We are always holding large stocks in bonded warehouse sufficient to meet all demands created by the superior quality of "4711" backed up by our very extensive Advertising Campaign.

On July 2 a huge consignment of all sizes reached London Docks safely. The goods were landed on the quay but, owing to the Dock Strike, this large consignment could not be released immediately. For this reason our stock of the smaller sizes kept in bonded warehouse was soon reduced to nil.

The moment the dock strike is over we shall have ample supplies to meet all demands, not only for orders already in hand but also for future requirements. While thanking our many friends for the generous support they have given us in the past, we hope they will realise that the delay caused by the Strike is a matter over which we have no control.

The moment work is resumed at the Docks our consignment will, on account of its large size, receive preferential treatment. We hope to be able to execute any orders for "4711" within the next few days.

"4711" is a QUICK SELLER.
"4711" SHOWS HANDSOME PROFITS to the RETAILER.

Write for Prices and Terms to—

R. J. REUTER COMPANY, LIMITED
Sole Direct Importers, 69 Carter Lane, E.C.4



WARNING TO THE TRADE

DRAGÉES GELINEAU

J. MOUSNIER (LONDON) LIMITED, REGISTERED OFFICES, 15 GREAT ST. ANDREW STREET, LONDON, W.C.2, HAVE BEEN APPOINTED THE SOLE REPRESENTATIVES FOR THE BRITISH EMPIRE (EXCEPT CANADA, AUSTRALIA AND NEW ZEALAND) OF MONSIEUR E. DELERME (SCEAUX (SEINE), FRANCE) FOR THE IMPORTATION AND SALE OF DRAGEES GELINEAU FOR THE BRITISH EMPIRE (EXCEPT CANADA, AUSTRALIA AND NEW ZEALAND).

REPEATED COMPLAINTS HAVE BEEN MADE RECENTLY REGARDING THE SUPPLY AND SALE OF DRAGEES GELINEAU IMPORTED INTO GREAT BRITAIN BY UNAUTHORISED PERSONS. TINS CONTAINING 100 DRAGEES HAVE BEEN WITHDRAWN FROM THE MARKET AND ARE NO LONGER AUTHORISED TO BE SOLD.

NOTICE IS HEREBY GIVEN TO THE TRADE that legal proceedings will be taken against all Firms importing or dealing in DRAGEES GELINEAU other than that obtained through the authorized source.

J. MOUSNIER (LONDON) LIMITED, further give notice that Messrs. WILCOX, JOZEAU & CO., of 15, Great St. Andrew Street, W.C.2. are their Sole Distributors of DRAGEES GELINEAU for the British Empire (except Canada, Australia and New Zealand), and the only authorized source through which DRAGEES GELINEAU may be obtained by the Wholesale and Retail Trade.

Firms holding any stocks of DRAGEES GELINEAU obtained otherwise than through the foregoing source are hereby notified that upon applying to Messrs. Wilcox, Jozeau & Co., their stock will be exchanged for the legitimate stock—value for value. This offer will hold good for the period of one month from the date of this advertisement, but cannot apply to any goods imported after the DATE OF THIS NOTICE.

The foregoing offer is made by J. MOUSNIER (LONDON) LIMITED in an honest endeavour to allow the TRADE holding illicit stocks of DRAGEES GELINEAU to relieve themselves of these and any Firms, Companies or persons who refuse to avail themselves of this offer will render themselves liable to legal proceedings without further warning.

J. MOUSNIER (LONDON) LIMITED, request all Firms holding stocks of DRAGEES GELINEAU to communicate immediately with Messrs. Wilcox, Jozeau & Co., stating the amount of the stock they have on hand for exchange in order that they may avail themselves if necessary of this FINAL OFFER.

J. MOUSNIER (LONDON) LIMITED, Sole Importers and Agents for the British Empire (except Canada, Australia and New Zealand), for Monsieur E. DELERME, Sceaux (Seine), France.

15 GREAT ST. ANDREW STREET, LONDON, W.C.2.

July 25th, 1923.

DEARBORN (1923) LTD.

37 Gray's Inn Road,
LONDON, W.C.1.

Toilet Specialties.

	Price per doz.	Selling Price to Retailer P.A.T.A.
PILENTA SOAP ...	10/-	1/-
A complexion soap.		
PROLACTUM ...	10/-	1/-
For the lips.		
PARSIDIUM JELLY ...	10/-	1/-
For wrinkles.		
ALLACITE OF ORANGE BLOSSOM ...	22/6	2/6
A dressing cream.		
BORANIUM ...	22/6	2/6
A hair tonic.		
CLEMENITE ...	22/6	2/6
For a face lotion.		
COLLIANDUM ...	22/6	2/6
For a face tint.		
PERGOL ...	22/6	2/6
A deodorant.		
TEKKO PASTE ...	22/6	2/6
Camphor cream.		
STALLAX ...	22/6	2/6
For a shampoo.		
JETTALINE ...	31/6	3/6
For clearing the skin.		
PHEMINOL ...	36/-	4/-
A depilatory.		
MENNALINE ...	36/-	4/-
For the eyelashes.		
MERCOLIZED WAX ...	31/6	3/6
A face cream.		
STYMOL ...	36/-	4/-
For oily complexions and blackheads.		
SILMERINE ...	22/6	2/6
Hair-curling fluid.		
BARSYDE ...	22/6	2/6
Dandruff eradicant.		
TAMMALITE ...	22/6	2/6
For grey and faded hair.		
LIQUID PERGOL ...	31/6	3/6
To check excessive perspiration locally.		
BICROLIUM ...	22/6	2/6
For whitening the hands.		
HARAPOSA ...	22/6	2/6
Nut oil shampoo.		
COCONOIDS ...	31/6	3/6
For figure development.		

The Products of

Messrs. PARKER, BELMONT & CO.

CLYNOL BERRIES	36/-	4/-
For obesity.		58/6
SOFT PALERIUM...	45/-	5/-
For wrinkles.		
LIQUID NAIL POLISH ...	10/-	1/-
Brilliant and lasting.		

Stocked by ALL Wholesale Houses.

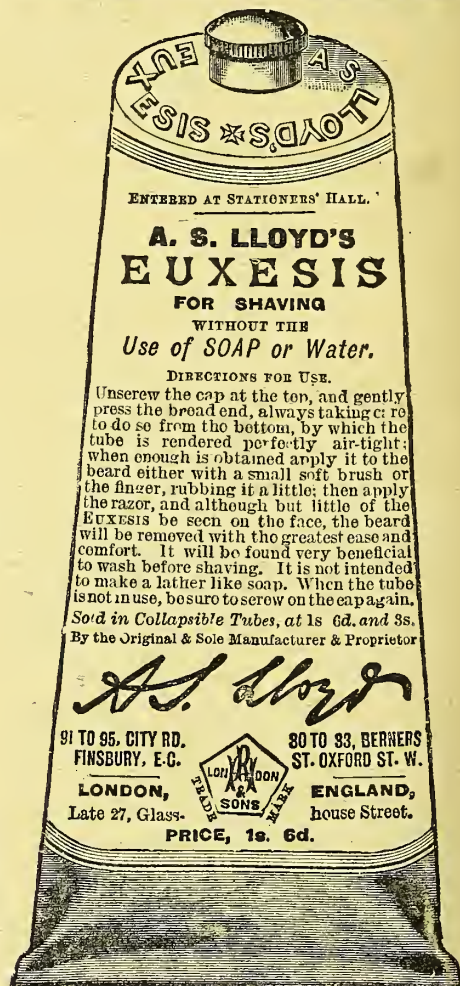
COLONIAL DEPOTS AND AGENCIES.

Australia: ALL WHOLESALE, & DEARBORN (Australia), Ltd., Grace House Clarence Street, Sydney.
South Africa: LENNON Ltd, Cape Town, etc.
India: FRAMJEE & SON, Bombay
 SMITH, STANISTREET & CO., Calcutta.
New Zealand: SHARLAND & CO., Auckland & Wellington.
South America: DEARBORN (South America), Ltd., Calla Salta 264, Buenos Aires
Straits Settlements & Federated Malay States: MEDICAL HALL, Ltd., Singapore.

A. S. LLOYD'S EUXESIS

(THE GENUINE).

For Shaving without Soap, Water, or Brush.



Sold by all Perfumers and Chemists throughout the World.

R. HOVENDEN & SONS having purchased, under an administration suit, the Business of the late A. S. LLOYD, with the Receipt, Trade-Mark, and Goodwill of the celebrated Euxesis, the Trade are cautioned that the original and genuine Euxesis is now manufactured at our Factory ONLY and may be obtained at either of our Warehouses.

PRICES ON APPLICATION.

NOTICE.—THE GENUINE A. S. LLOYD'S EUXESIS bears a label printed in BLACK only on a Yellow ground, with our Trade Mark at the bottom, as illustration.

Proprietors: R. HOVENDEN & SONS, LTD.

LONDON: 89-95 City Road, E.C.1; and 29-33 Berners Street, W.1

A. S. LLOYD'S EUXESIS.

For Shaving without Soap, Water, or Brush.

CAUTION.

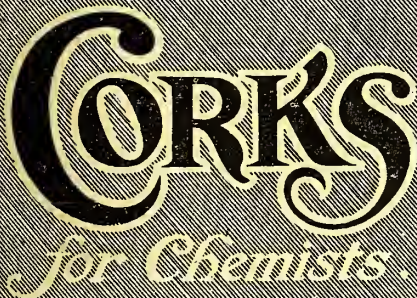
The Labels on GENUINE EUXESIS bear two signatures—
A. S. Lloyd in Black Ink, and that of his Widow,
Aimée Lloyd, in RED. Refuse any other.

Sole Manufacturers and
Proprietors:

AIMÉE LLOYD & CO.

23 PANTON STREET (formerly named Spur Street),
HAYMARKET, LONDON, S.W.

N.B.—When ordering from Wholesale Houses write LLOYD'S EUXESIS (WIDOW'S).



Send us your Enquiries
and compare our prices.
Wholesale & Export Only.

C. OLLEY & SONS, LTD.

Established 1844.

Camperdown St. and Gt. Alie St., London, E.1

Tel. No.: Avenue 6630. Tel. Ad.: "Circumference, Ald, London."

METALLIC CAPSULES

for all kinds of Bottles and Jars.

The Tonkin Metallic Capsule Co.

Proprietors: C. Olley & Sons, Ltd.

*This delightful cream
meets the needs of all
ladies*

The Phyllis Earle Foundation Cream is a delightful greaseless cream for use before powdering and one which will preserve the softness and smoothness of the skin and delicacy of the complexion.

There is a demand for this cream amongst those who know how really beneficial a good cream can be for it is essentially a high-class product. Profits are just right for the pharmacist who will find that to stock it is well worth while on account of the repeat orders he will get through recommending such a charming cosmetic.

**PHYLLIS EARLE
FOUNDATION CREAM**

Write for trade terms and full particulars.

PHYLLIS EARLE
15 North Audley Street, W.1.
(Proprietors of "Kemolite.")



Tripinate Bath Salts

Containing Isobornylalyl-Pineol.

Recommended for

**RHEUMATISM
LUMBAGO
SCIATICA
SPRAINS
MUSCLE STIFFNESS**

Tripinate Bath Salts do not merely colour and perfume the bath water, they have distinct medicinal properties, and greatly stimulate the activity of the heart and blood circulation.

For full particulars and Terms apply

COLE & WILSON

19 Railway Street
HUDDERSFIELD

London Depot :

**1 SWAN STREET
MINORIES - - E.1**

Telephone - - - Avenue 6255

TRADE MARK



We can give prompt delivery

Citrate of Magnesia

In Bulk, 1 lb. Bottles and Cheltenham

Health Salt

**Lime Juice
Blood Salt**

Grape Saline

**DR. HALL'S
Liver Salt**

GRANULAR or POWDER

Packed in Enamelled Tins or Bulk

Attractive Show Matter supplied

LEMONADE CRYSTALS

Bulk or Packed

THOS. GUEST & CO., Ltd.
ANCOATS - - MANCHESTER.

QUALITY PREDOMINATES

WITH the help of our advertising you have to sell these products the first time only. The second and each successive sale is assured by the quality of the goods themselves. Never be out of stock of these quick-selling, rapidly moving lines. Recommend them with confidence and remember—*every sale means a pleased and satisfied customer.*

REUDEL BATH SALTRATES^{AND} ALKIA SALTRATES

THE BATH PREPARATION PAR EXCELLENCE, cures Corns and all Foot Troubles permanently, stops Rheumatic or other aches and pains within ten minutes.

Sells at 2/- and 3/3 (P.A.T.A.)

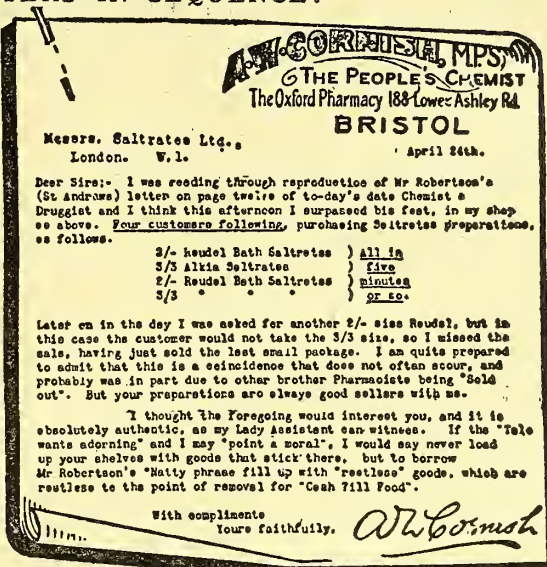
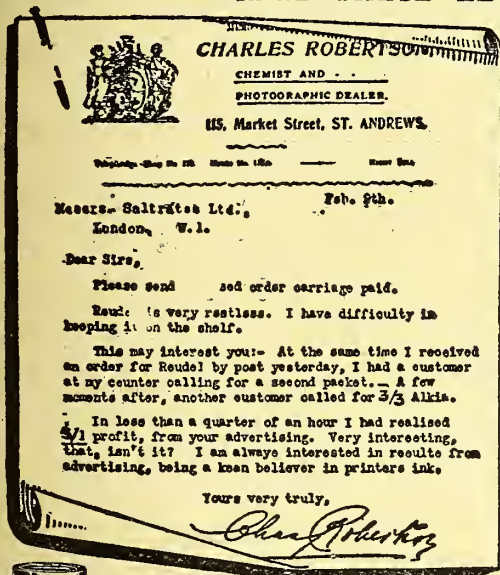
The acme of perfection in Salines. Unrivalled for Liver, Kidney, Stomach, Blood and Intestinal Disorders.

Sells at 3/3 a large bottle (P.A.T.A.)

These products simply will not stay on the shelf.

SOME TRULY REMARKABLE TESTIMONY FROM CHEMISTS

READ THESE LETTERS IN SEQUENCE:

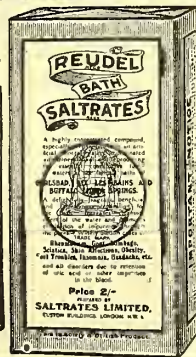


Note.—The above statements were sent to us without solicitation of any kind.

YOU can stock these goods on Guaranteed Sale Terms. Carriage Paid in United Kingdom on orders for 3 dozen and over, which may be assorted. Special Terms for Window and Counter Display.

SALTRATES LIMITED

Euston Buildings, LONDON, N.W.1.



ESSENCES & SYNTHETICS LTD.

Directors :
D. MISELL. W. M. VALON.

4 CARLISLE AVENUE,
FENCHURCH STREET,
LONDON, E.C.3.

Works : HULL.



Manufacturers of Synthetics
and

Importers of Essential Oils
and Pharmaceutical Products.

Telephone No. : Avenue 1419.

Telegraphic Address :
"Essynthet, Ald., London."

NEW FIXATOR FOR PERFUMERY

VIOLET Perfumes are much improved by the use of the correct **FIXATOR**. In the art of perfumery, the all-important question of **Fixation** has been allowed to fall into obscurity owing to the anxious search for new odours. We have perfected a new compound which will not only equalise the rates of evaporation of the many constituents, but will also give to the bouquet a new and fresh flowery note.

Write us at once for a sample of

"VIOFIX" 127

*and try it in this Compound as
per formula.*



Ionone Alpha	-	-	-	600
Concrete Orris Oil	-	-	-	60
Heliotropin	-	-	-	60
Methyl Heptene Carbonate	-	-	-	5
Ylang Ylang Oil	-	-	-	25
Bergamot Oil	-	-	-	20
Rose Synthetic	-	-	-	30
Jasmin Synthetic	-	-	-	50
Cassie Synthetic	-	-	-	50
"VIOFIX" 127	-	-	-	100

FIXATORS FOR FACE POWDERS

If you want a delicate and persistent perfume for a "de luxe" face powder, you must use a perfect fixator in combination with your other constituents. We are able to offer two entirely new compounds—both of which will give you a soft inimitable flowery note.

WRITE FOR SAMPLES

FLEUROL

A liquid fixative of great persistence.

FLEURETTE

A powder having perfect tenacity.

WE CAN SUPPLY YOU WITH ALL YOUR RAW MATERIALS

Ashes of Roses

(BOURJOIS-PARIS)

The most exquisite and dainty ever known.

AN APOLOGY

WE must apologise to our customers for the enforced delay in dealing with their valued orders for *Ashes of Roses* Perfume and Face Powders. We are doing our very utmost to cope with the situation, and can assure our friends that no effort is being spared to minimise the inconvenience and disappointment created by the delay.

THE EXPLANATION



No. 2.
Per 15/- doz.



No. 41.
Per 6/- doz.

Even our optimistic view of the manner in which the *Ashes of Roses* Series would be received by the public and the trade did not adequately gauge the extraordinary demands that has been made upon our London stocks, owing to the tremendous popularity the *Ashes of Roses* Series is enjoying with the public, which is evidenced by the rapidity in which our customers are duplicating and increasing their orders.

OUR SPECIAL REQUEST

To avoid disappointment to your customers, we would specially urge you to examine your stocks and favour us with your requirements well in advance. By doing this you will ensure supplies, and greatly assist us in giving you the service that we desire.

A. BOURJOIS et CIE, Ltd., 66 Carter Lane, E.C.4.
PARIS NEW YORK SYDNEY

The logo for Gibbs Cold Cream Shaving Soap. The word "Gibbs" is written in a large, stylized, cursive script. Below it, the words "COLD" and "CREAM" are written in a smaller, bold, sans-serif, all-caps font. At the bottom, the words "Shaving Soap" are written in a cursive script, similar to "Gibbs" but smaller. The entire logo is enclosed within a dotted-line triangle that points downwards.

Gibbs

COLD CREAM

Shaving Soap

***As comforting
to the Chemist
as it is
to the skin of the user***

Comforting we say, for we know that Gibbs Cold Cream Shaving Soap is a line which pulls its weight in the business race.

It is always a sure seller because of the strong appeal that lies in the soothing cold cream content, and also in the patent thumb push holder—the world's first patent and the best—and, moreover, because it is a really good British Shaving Soap.

The press advertising campaign now appearing regularly and frequently in the important newspapers and journals of national circulation are making sales easier than ever. Get your fair share of these sales by carrying good stocks of Gibbs Cold Cream Shaving Soap.

**D. & W. GIBBS, Ltd. (Dept. D.G.8)
City Soap Works, London, E.1.**

Lorimer-Marshall, Ltd., for PACKED GOODS

Granular Effervescent Citrate of Magnesia

Seidlitz Powders (Plain & Lemon Flavoured)

Health Salt Salines

Compound Syrup of Hypophosphites

Blood Purifier Tonic Elixir

Children's Tonic

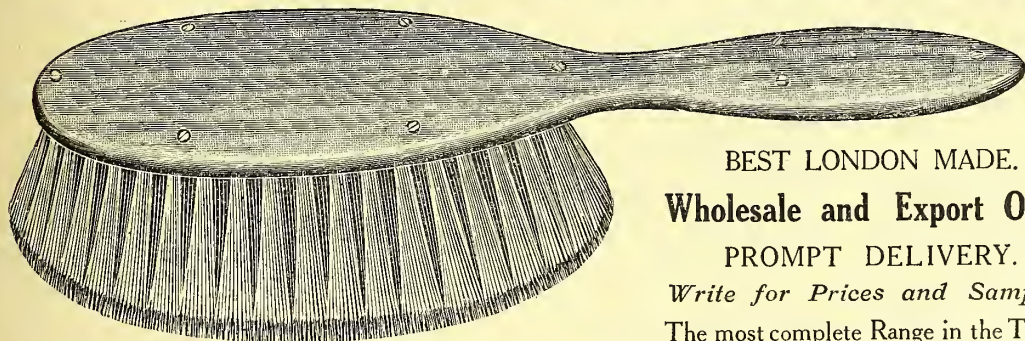
AT KEENLY COMPETITIVE PRICES.

LORIMER-MARSHALL, LTD., 12 Tower Hill, London, E.C. 3

Works Telephone : New X 2119.

Telegrams : "Lorimarsco, Bilgate, London."

WHALEBONE HAIR BRUSHES



Also Polished Horn, Pin Bone (Extra Fine Whalebone)

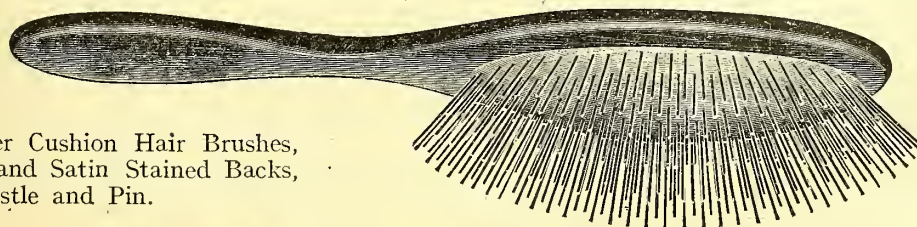
BEST LONDON MADE.

Wholesale and Export Only.

PROMPT DELIVERY.

Write for Prices and Samples.

The most complete Range in the Trade.



Rubber Cushion Hair Brushes,
Rose and Satin Stained Backs,
in Bristle and Pin.

JOHN FREEMAN, 10 Moor Lane, LONDON, E.C.2

Wholesale Brush Manufacturer & Importer.

Telephone : London Wall 1656.

Factory : WALTHAMSTOW

Telegraphic Address: "CRESSWELL, LONDON."

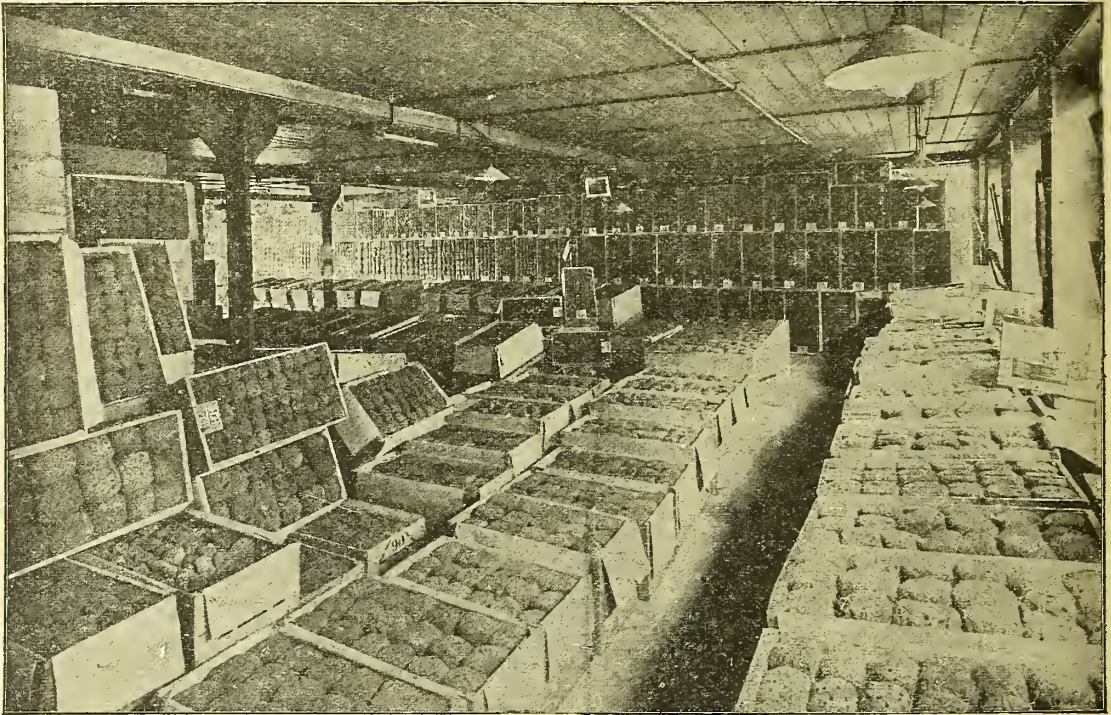
Telephone: No. 1432 Holborn.

THE SPONGE HOUSE

INTERNATIONAL SPONGE IMPORTERS, LIMITED,

CRESSWELL BROTHERS BRANCH

Sponge Importers, Exporters and Merchants, and Chamois Leather Dressers,
18 and 19 RED LION SQUARE - - - LONDON, W.C.1
 WITH THE LARGEST STOCKS OF ALL SPONGES IMPORTED DIRECT BY US FROM THE FISHERIES
AT LOWEST PRICES. WE INVITE COMPETITION.



Buyers are invited to Call to Inspect our Magnificent Stocks and make their own selections. Lowest Market Prices.
 Absolutely Best Values. The following abridged List will serve as a guide to Buyers when writing.

UNBLEACHED MEDITERRANEAN SPONGES in Original Cases.

THE CONTENTS OF THE FOLLOWING CASES WILL BE PRESS-PACKED AND SENT POST FREE
 TO COLONIAL AND FOREIGN BUYERS WITHIN THE RADIUS OF PARCELS POST.



HONEYCOMB.

Extra Choice.
 Finest Texture and
 Shape.
 The Pick of all
 the Fisheries.

Pieces in Case.	Average Price per Piece.	
300 Toilet	at 9d.	
250 "	" 1/-	
200 "	" 1/6	
160 "	" 2/-	
140 "	" 2/6	
120 "	" 3/-	
100 "	" 3/6	
90 Medium Bath	4/6	
80 "	" 5/6	
72 "	" 6/6	
60 "	" 7/6	
45 Large	" 8/6	
30 "	" 10/6	

HONEYCOMB.

Toilet & Bath.
 Good 2nd Quality

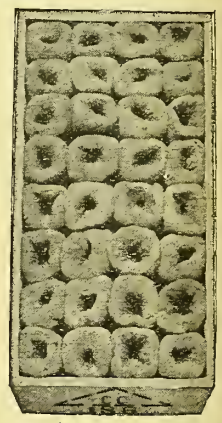
Pieces in Case.	Average Price per Piece.	
270 at	... 6d.	
180 "	" 9d.	
170 "	" 1/-	
160 "	" 1/6	
140 "	" 2/-	
120 "	" 2/6	
110 "	" 3/-	
90 "	" 3/6	
80 "	" 4/-	
75 "	" 4/6	
70 "	" 5/-	
65 "	" 5/6	
60 "	" 6/6	

FINE TURKEY

SOLIDS.

SELECTED
 SHAPES.
 1st Quality

	Average Pieces in Case.	Price per Piece.
Nursery	200 at	1/-
Toilet	150 "	1/3
"	100 "	1/9
"	100 "	2/-
"	80 "	2/6
Bath	50 "	3/-
"	36 "	4/-
"	24 "	5/-



LOOSE GOODS DEPARTMENT.

SPONGES IN SMALL PACKAGES. Fine Turkey. Fine Egyptian and Honeycomb. In 1st, 2nd and 3rd Qualities
 Bleached or unbleached (state which in ordering). On strings of 1 dozen pieces, or loose in bags. At per doz.: 2s., 3s.,
 4s., 6s., 9s., 12s., 15s., 18s., 24s., 30s., 36s., 42s., 48s., 54s., 60s., 66s., 72s. Bleached Cuban. At per String or
 Dozen. Wool, Grass, Yellow and Fine. 1s., 2s., 3s., 4s., 6s., 9s., 12s., 15s., 18s., 24s.

SPONGES

You can be sure of getting
the best by dealing with

**THE SPONGE FISHING &
IMPORTING CO., LTD.**

(Societe Anonyme pour la Peche et L'Importation des Eponges)
(Inc. in Belgium)

**25 FINSBURY STREET, CHISWELL ST.
LONDON, E.C. 2**

*Buying Branches at Sfax, Tripoli, Kelymnos-Symi, Hydra,
Batano, Nassau, & Florida.*

Selling Branches at Brussels, Paris, Barcelona, & Hamburg.

No Connection with any other firm

*Quality
Right*

*Prices
Right*

*Terms
Right*

CHEMISTS! YOU'RE SLOW!

YOUR Customers are sending direct to us for supplies of

"ECMO"

HIGH CLASS TOILET PREPARATIONS

YOU will get credited with Discount for all
such orders after we receive your first orders.
WE DO NOT want RETAIL TRADE; you
should have THAT.

WE OFFER YOU SPLENDID DISCOUNTS. TAKE THEM!

Write TO-DAY for New Descriptive Folder and Trade Terms.

THE "E.C.M.O." CO. (Lab. 2) 27a MERE ST.
DISS, NORFOLK.

G. B. KENT & SONS, LTD.

Are known the World over as
the Largest Manufacturers of

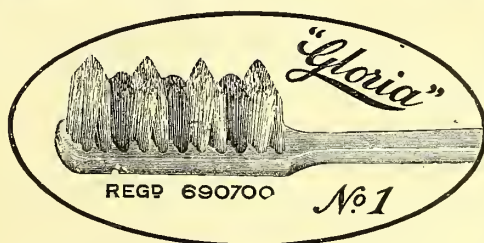
BEST BRITISH RUSHES

Please write for full Particulars to—

75 Farringdon Road, E.C. 1.

BIDWELLS

NEW DESIGN.



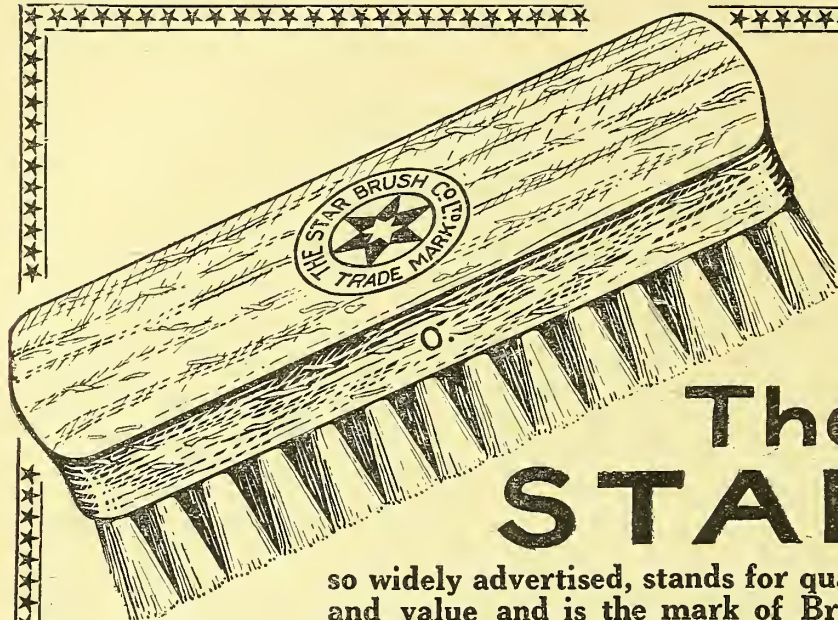
ADVANTAGES:

Used up, and down on the teeth it cleans in
between them, and if pressed down hard the
bristle will not crush.

Short knots in extra hard white, yellow or
black bristle, long knots always white. Ventila-
ting holes in back and hole in handle for hanging
up. Sterilised and sealed in transparent Carton.

PRICE 17/- dozen ; 19/- Hard.
MINIMUM RETAIL 2/3 each ; 2/6 each.

Castle Mills, Axminster, Devon.



The STAR

so widely advertised, stands for quality and value and is the mark of British Goods made by British Labour.

The public know the wearing qualities of Star Brushes and have complete confidence in the brand. Millions insist on having "the brush with the Star on the back" because they know by experience it is the best that money can buy.

You can profit by this great public demand if you stock

STAR NAIL BRUSHES

Write at once for the splendid sample case containing 81 brushes of the best selling lines which we are supplying for £1 carriage paid.

STAR BRUSH CO., LTD.
EDEN GROVE, HOLLOWAY, N.7.



Millions of People

are being told in our
Press Advertising that

"to get the Pro-phy-lac-tic Tooth Brush, originated and made by the Florence Manufacturing Co., of Florence, Massachusetts, U.S.A., since 1880, look for the hyphenated word Pro-phy-lac-tic stamped on the YELLOW Box."

To an ever-increasing public our convincing advertising is driving home in the monthly, weekly, and daily Press the merits of the Pro-phy-lac-tic Tooth Brush in the sanitary YELLOW Box.

Let the public see the Pro-phy-lac-tic in your windows—and thus profit by this advertising.

Pro-phy-lac-tic Tooth Brush

Only in YELLOW Box

*Manufactured by the Florence Manufacturing Co.,
Florence, U.S.A.*

In 3 sizes—adult's, youth's, and child's;
in 3 textures of bristles—hard, medium, or
soft; one quality only—each in its indi-
vidual YELLOW Box with hook for hanging.

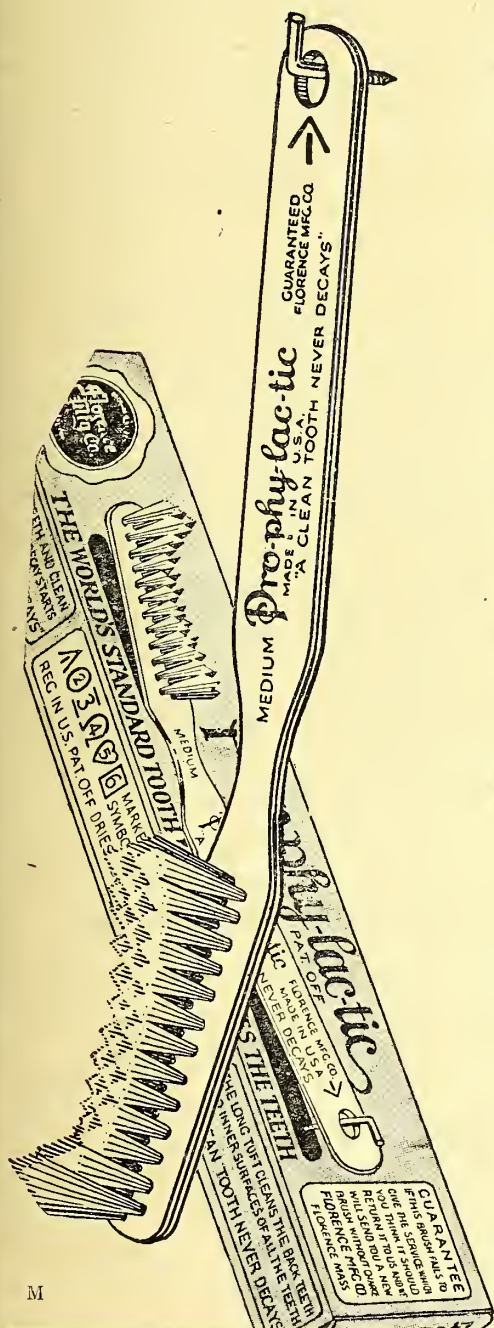
Price to the Public 2/6

To the Retailer, a Full Trade Profit

Sold through the Wholesale Houses only

WM. E. PECK & Co., Inc.

31 Bartholomew Close - - LONDON, E.C.1



It Will Pay You to fill the Demand

THE absolute dependability of NUCTONE, plus NUCTONE advertising, nation wide in its scope, ensures continuous and rapid turnover.

You have behind you the NUCTONE Guarantee.

You have the certainty that your customers will be fully satisfied—and with this the equal certainty that they will return to you for future supplies.

NUCTONE cannot fail to pay you—the terms are liberal.

NUCTONE for grey hair has a tremendous and much appreciated advantage over instantaneous hair-dyes and is unique in many ways, chiefly because of its mode of action by which colour is **gradually** restored after the hair has been exposed to light and air.

The national advertising campaign for NUCTONE—in such widely read periodicals as the "Daily Mail," "Daily Mirror," "Home Chat," "Home Companion," "Weldons," etc., etc.—is building up a worth-while demand. This makes it a profitable business move to stock NUCTONE and give it all possible display.

Showcards and explanatory booklets for free distribution are furnished free on request.

GUARANTEE

The Manufacturers guarantee that NUCTONE is absolutely free from any combination of lead and sulphur, and contains no ingredients that can possibly injure the hair. NUCTONE can therefore be recommended with entire confidence to your customers.

Nuctone

for GREY HAIR

Retail Price 6/6 per bottle.
Price to you 52/- per doz.

In three grades:

NUCTONE for dark hair.
NUCTONE ECLAIRE for fair & auburn shades.
NUCTONE CONCENTRE for Gentlemen.

Wholesale Distributors:

HENRY C. QUELCH & CO.
4-5 Ludgate Square, London, E.C.4

Manufactured by
STEWART, GOODALL & DUNLOP, LIMITED.
4 Dering Street - - - - - London, W.1

LITTO

P.A.T.A.

**preparations for the
hair are unexcelled**

There are several varieties of "LITTO," specially prepared to be of the utmost benefit in the treatment of various hair disorders, but they are all based on the renowned "Litto," which has proved beyond the possibility of doubt to be an unfailing remedy for the hair.

**LITTO GIVES COMPLETE SATIS-
FACTION TO YOUR CUSTOMER.
LITTO SHOWS YOU 100 PER
CENT.**

*May we send you our illustrated trade
list?*

2, Newington Green, LONDON, N.1.

"Newbery's"

FRANCIS NEWBERRY & SONS LTD.

THE HOUSE FOR SUNDRIES

Household Measure, with
Lip, British-made, extra
strong per dozen **9/-**
net

Special large bulb Enema,
with usual fittings complete
in oval card box, per dozen **21/-**
net

"Jewel" Celluloid Prophylactic
Tooth Brush, each
in carton per dozen **12/-**
net

Bathing Caps, varied assortment.

Special List of these Caps on request.

**27-28 CHARTERHOUSE SQUARE
LONDON, E.C.1.**

ALSO AT CARDIFF AND LIVERPOOL.

STILL ON TOP!!

EDWARDS' HARLENE TOILET SPECIALITIES

THE WORLD'S BEST SELLERS



"HARLENE"
FOR THE HAIR

"UZON"
BRILLIANTINE

"CREMEX"
SHAMPOO POWDERS

"ASTOL"
FOR GREY HAIR

"ASTINE"
VANISHING CREAM

"ASTINE"
TOOTH CREAM

"ASTINE"
SHAVING STICK

"ASTINE"
NAIL CREAM

SUPPORTED BY WIDESPREAD PUBLICITY
WHICH BRINGS YOU NEW CUSTOMERS DAILY

BE ABREAST OF THE TIMES.

FOLLOW THE TIDE OF SUCCESS.

Watch the Great Free Gift Advertising Campaign that brings the Customers to YOUR Shop.

No Chemist or Store can afford to be without this unique line of Toilet Preparations.

For Particulars, Terms, etc., write to

EDWARDS' HARLENE, LIMITED

20, 22, 24 & 26 LAMB'S CONDUIT STREET, LONDON, W.C.1.

Beaverpuf

Series

Mousley's Patents.

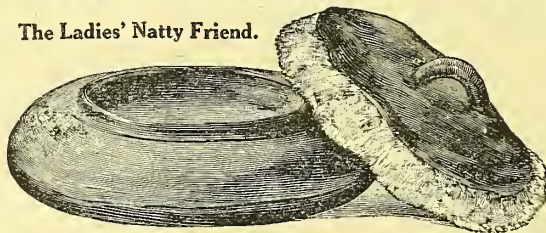
A "Beaverpuf" in your window means extra profits, it means satisfied customers and a bigger turnover, it means possibly more than you imagine.

Our new method of sealing obviates soiled stock and carries our guarantee right into your customer's hands.

The Powder Puff of Distinction

Refills in Rachel,
Naturelle, Rose,
Sunburn, Blanche
and Rouge
6d. and 1/- each.

The Ladies' Natty Friend.



Prices from 4/-
to 21/- each.

Every Puff
guaranteed.

LARGEST SALE OF ANY POWDER PUFF IN THE WORLD

Ask for a Beaverpuf with either Lambswool, White or Brown Fur Puff.

Write for illustrated booklet and lists—

"BEAVERPUF," Ltd., Priest Bridge, London, S.W.14

Sole Concessionnaires for Great Britain and Ireland.

Phone: PUTNEY 166.

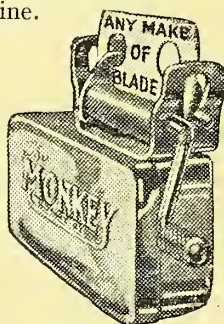
The man who shaves himself will thank you

for putting before him this efficient and reliable stropping machine.

And on every sale you make you clear a profit of

33⅓ per cent. for yourself

Samples at dozen rate.
Special offer 6 stropps packed
with strutted Show Stand
21/- c.w.o.



"De Luxe" Model, in Nickel-Plated Case.

Retails at 5/6. Wholesale 45/- doz.

ORDERS through usual WHOLESALERS, including May Roberts, Osborne Garrett, Butler & Crispe. Hoven-den's, Sangers, Maw's and Sutton (of London), and Bleasdale (York), Daniel (Derby), Thompson (Liverpool), and Woolley (Manchester).

WHOLESALE and EXPORT ENQUIRIES INVITED:

Manufacturers: **DOUGLAS KIRBY & CO.,**
Eastgate House, Gloucester, ENGLAND.

The Evan Williams

ALWAYS IN GREAT DEMAND.
PRICE LIST ON APPLICATION.

The EVAN-WILLIAMS Co., Ltd., 18 Ogle Street, W.1.

ORIGINAL STAMPOO.



SHADEINE

For COLOURING GREY HAIR

This popular article is largely advertised and stocked by all Wholesale Houses.

Trial Size 8d., per post 10d. 1/4 size, per post 1/7; 2/6 size, per post 2/10; 3/9 size, per post 4/3; 8d. size, 6/- doz.; 1/4 size, 12/- doz.; 2/6 size, 24/- doz.; 3/9 size, 36/- doz.

THE SHADEINE CO., 58 WESTBOURNE GROVE, LONDON, W.

A GREAT TOILET COMFORT.

"POUDRE DE SANTÉ."

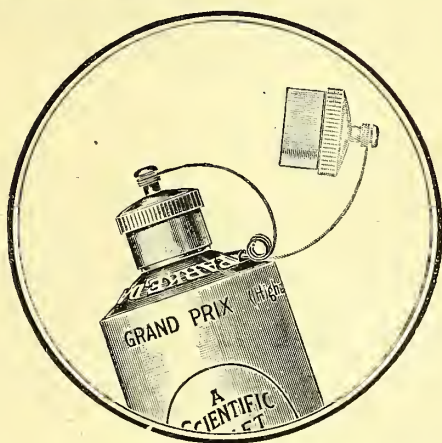
IN the way of toilet powders **POUDRE DE SANTÉ** is "off the beaten track," and has not one single drawback. It is effective, convenient, absolutely harmless, pleasant to use, and neither injures nor discolours the underwear. It prevents all tendency to chafing, and completely obviates all the unpleasantness of

PERSPIRATION

and being a perfect deodorant corrects instantly all body odours. The preparation sells at sight wherever shown, and is a line well worth taking up. The retail prices are 1/3 trial size, 2/9, 3/9, 4/9, less 33% to 40% discount according to quantities, and carriage paid on large or small orders. Liberal terms to export buyers. Agents wanted for home and abroad.

Address—70a BASINGHALL STREET, LONDON, E.C.

THE
**FAR-SEEING
PHARMACIST**
places his
confidence
in
Euthymol
TOOTH PASTE

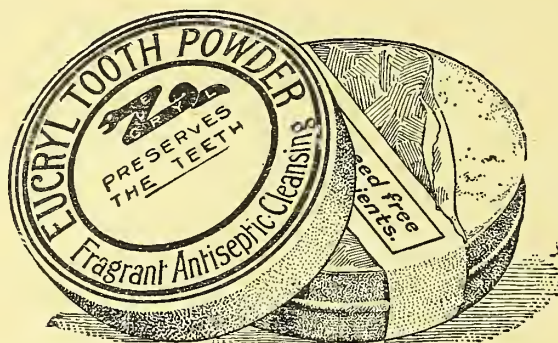


To link up with the
press advertising,
the Spring-Cap
tubes should be
kept prominently
exhibited in your
window and on
your counter.

Write for terms.

Parke, Davis & Co.,
50-54 Beak Street, London, W.1.

PRICE REDUCTION



PLEASE note that in accordance with our circular of April 18th the retail price of large flat tins of Eucryl Tooth Powder was reduced to 1/- each on July 18th.

Now for increased sales

EUCRYL LIMITED
SHIRLEY SOUTHAMPTON

Ingram's Milkweed Cream

THE advertising of this line is just being resumed. Readers of the *Daily Mail*, *Daily Mirror*, *Sketch*, *Tatler*, *Eve*, *Queen*, etc., regularly and repeatedly will be told of the advisability of using Ingram's Milkweed Cream.

Enquiries will emanate from all districts, and we ask you to take this opportunity of getting this business for your district.

Prices are : *Retail*, 2/- & 4/- per jar.

To Chemists :

18/- and 36/- per doz. respectively.

**These prices are protected
on the list of the P.A.T.A.**

How are your stocks of it?

SUPPLIES CAN BE OBTAINED FROM
SANGERS

258 EUSTON ROAD - - - LONDON, N.W.1
OR FROM YOUR USUAL WHOLESALERS


D^r HALE'S
VIN-SANGUIS
 WINE FOR THE BLOOD

Fountain of Health

If you have a Wine License we will pay the fee.
 If not, get one, we will pay.

You agree to display "Vin Sanguis" always.
 You give us an agreed initial order.
 You always keep stock

Send for any further particulars



PROPRIETORS OF
 DR. HALE'S VIN-SANGUIS

Transcontinental Agencies Ltd
 14, Southampton St., London, W.C.2

MADE WITH OLD DOURO PORT



Saint-Raphael

**Tonic, Restorative,
 Digestive Wine.**

**Known throughout the World,
 and prescribed in all cases of
 ANÆMIA, DEBILITY, and CON-
 VALESCENCE, to Young Women,
 Children and the Aged.**

DOSE : One wine-glass after the
 two principal meals.

Recommended by—
 PROF. BOUCHARDAT, Professor of
 Hygiene, Paris Faculty of Medicine.
 DR. MACNAUGHTON JONES, London,
 England.

"For more than thirty years St. Raphaël Wine has been exclusively prescribed, with success, in the Paris hospitals as a pure tonic, by eminent physicians, such as Magendie, Roson, Chomel, Velpeau, Requin, Monneret, Trouseau, Grisolle, Laënnec, &c."—*Union Médicale*, May 8 and June 12, 1873.

"The 'Vin de St. Raphaël' is often used for ladies nursing their own children; it is preferable to stout, which creates an unhealthy fat."—*The Lancet*, London, England.

"St. Raphaël Wine is most precious in all cases where it is necessary to give tone to the system, without effort or shock."—DR. C. DES BARRES.

Cie du VIN SAINT RAPHAEL, Valence, Drome,
 FRANCE

**To be obtained from all
 Wholesale Druggists.**

Vinum Xericum

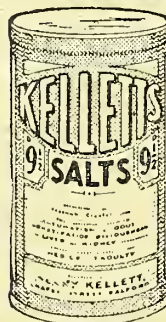
BUTTS.	HOGSHEADS.	QR. CASKS.
108 galls.	54 galls.	27 galls.
Grade A. STRENGTH 16.5°—17° Abs. Alc.		
Grade B. " 18°—19° Abs. Alc.		

James V. Oldham

19 St. Dunstan's Hill, London, E.C.3.

Telephone : Avenue 3013.

"KELLETT'S SALTS"



for Rheumatism,
 Gout, Sciatica, &c.

Well advertised to the Public.

**RETAILS at 9½d.
 showing 35% profit**

From all Wholesalers.

Send a postcard for Terms.

KELLETT'S SALTS, Ltd.
 Chapel St., SALFORD.

WINGARNIS

Sells readily ALL the time

COLEMAN & CO., Wincarnis Works, NORWICH.

**IMPORTANT NOTE
 TO CHEMISTS
 WITHOUT LICENCES**

It has been established
 by law that Registered
 Chemists may sell
 "Wincarnis" with
 Quinine without a
 licence.

You are sure of good sales
when you stock—and show—

NATURAL HEALTH SALT.

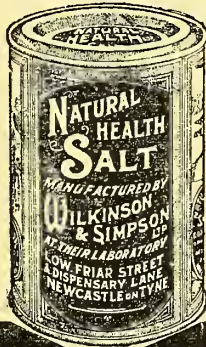
The Original Health Salt of the World

It sells well at any time—but the demand is exceptional during Summer when it is first favourite as an effervescent thirst-quencher and blood purifier.

Natural Health Salt is the pioneer of all health salt—first on the market, and first to be packed in tins. For your trade it is right in every way—Quality, Price and Profit.

If you have not received particulars of the great Prize Distribution Scheme write now.

Wilkinson & Simpson Ltd.
NEWCASTLE-UPON-TYNE.



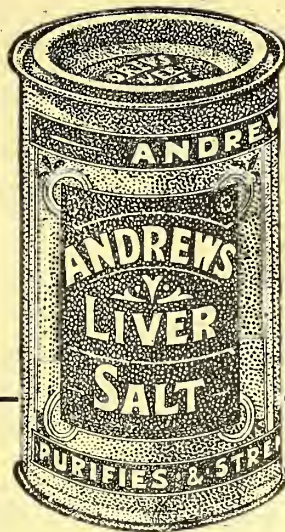
NOW IS THE TIME TO ORDER

MASON'S EXTRACT OF HERBS

Newball & Mason
NOTTINGHAM



"Good! It's Mason's!"



On August 10th
1,770,848

people at least, will read the "Daily Mail" front page announcement embodying the

*Andrews' Message
to the Nation*

In addition to all those who actually buy the "Daily Mail," there is the "extra" circulation—the people who will see the Andrews Message without buying the paper.

Big as the figures are at the head of this advertisement—maybe they will be doubled—even trebled—when every reader is taken into consideration.

It will pay you to connect your shop with the accelerated demand for Andrews—and you can do so by displaying

ANDREWS Liver Salt

Display the Andrews Tins very prominently in your windows and on your counters during the week of the page advertisement and the week after, too. You will find it well worth your while.

If you would like a reprint of the "Daily Mail" front page "Andrews Message to the Nation" to further help your display, just write to us and we will gladly send you one by return.

SCOTT & TURNER, Ltd, Manufacturers
(Dept. C.D.)
Gallowgate, - NEWCASTLE-UPON-TYNE.

BISHOP'S NATURAL FRUIT SALINE

is now **reduced** to **19/-** per dozen, subject; the Retail Price remaining at **2/3** per bottle, P.A.T.A.

A Bonus is offered on orders for 6 dozen, or 12 dozen on consideration of Chemists giving a Window Display.

Attractive Showcards and Price-cards will be forwarded with each order.

BISHOP'S NATURAL FRUIT SALINE

is a business bringer. It sells well all the year round.

To the Chemist.—**11½d.** per bottle profit if you purchase one gross lots.
11d. per bottle profit if you purchase 6 dozen lots.

Bonus quantities forwarded carriage paid.

It pays to push BISHOP'S.

PREPARED ONLY BY

ALFRED BISHOP, Ltd., 48 Spelman Street, LONDON, E.1

VITAMOGEN

(VITAMINES)

INVALUABLE FOR
SLEEPLESSNESS
NERVOUS DISORDERS
CONVALESCENCE
AND
INFANTS.

Retail Price - - 2/- and 4/6.

*To be obtained of All
Chemists, or direct from*

VITAMOGEN, Ltd.

(DEPT. C)

24/26 Holborn, LONDON, E.C.1.

NEW ZEALAND HONEY "IMPERIAL BEE" brand

Packed in 1's and ½'s Glass & Monopots, etc.

Nature's own: Sweetmeat, Food, Medicine. Guaranteed pure. Stock the best and increase your trade.

The author of "Science of Eating" says:—

"We are lengthening life by modern sanitation, by saving infants, etc., while killing off men and women in the early forties with diabetes and obesity. For a hundred reasons, all of them compelling, let us eat less sugar and more Honey."

A lady shopping on the South Coast told her grocer:—

"I didn't know Honey was so nice until I tasted 'IMPERIAL BEE.' I shall always keep it on the table now."

Apply for full particulars and prices to:—

A. J. MILLS & Co., Ltd.,

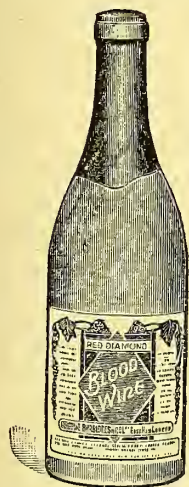
Produce and Canned Goods Dept.,

14, TOOLEY STREET, LONDON, S.E.1

Sole European Agents for:—
THE NEW ZEALAND HONEY PRODUCERS' ASSN. LTD.

COUNTER REQUISITES

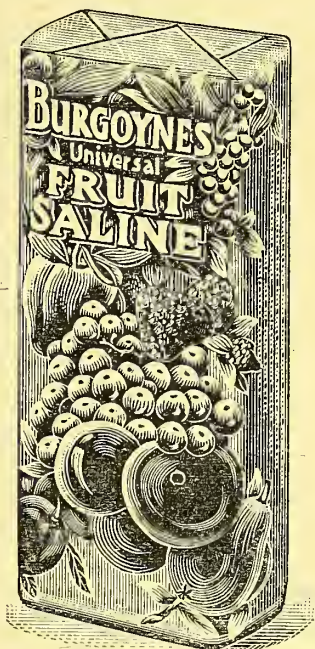
(BURGOYNE)



PACKED IN TWO
SIZES—

6's ~ to Gallon.
12's ~ to Gallon.

RED, BLACK AND GOLD
LABEL.



80%

PROFIT ON COST.

Retail Price per Bottle

2/3 P.A.T.A.

SHOWCARDS AND LEAFLETS
SUPPLIED.



SIZES—

2½-oz. Amber Panels
5-oz. „ Rounds
10-oz. „ „

ELEGANT FINISH.

*Our Illustrated List contains many such items.
Write for a copy. ∴ It will interest you.*

BURGOYNE, BURBIDGES & CO., LTD.
East Ham, E.

Glaxo—the money maker

39 per cent. on your cost or 20 and 10 per cent. off the advertised price! This is what you can make when you buy Glaxo in £12 lots and give a 10 days' window show.

The *Daily Mail* seven insertions in July with other advertisements in the *Evening News*, *Daily News*, *Daily Chronicle*, *Daily Mirror*, *Daily Sketch*, *Times*, many provincial papers—together with our representatives calling on doctors, and our following up birth notices—are all helping to make sales of Glaxo.

Why not sell Glaxo, not only for baby, but for the expectant and nursing mother, the growing child and the invalid who has been ordered, but cannot digest, ordinary cow's milk? Will you not send an order and give Glaxo a display and attract this trade to your pharmacy?

Glaxo

The Money Maker
"Builds Bonnie Babies"

**SPECIAL PARCEL BOUGHT ON
ADVERTISING DISPLAY TERMS**
England and Wales only.

Parcel contains	Costs you	Yields	Total Profit
	£ s. d.	£ s. d.	£ s. d.
2 doz. 1/6 Glaxo	1 6 0	1 16 0	10 0
2 " 2/6 "	2 3 2	3 0 0	16 10
2 " 4/6 "	3 17 10	5 8 0	1 10 2
1 1/2 " 7/6 "	4 17 3	6 15 0	1 17 9
Total ...	£12 4 3	£16 19 0	£4 14 9

GLAXO (Sales Dept.), 56 Osnaburgh Street, London, W.1

"BEST
for
MOTHER
and
BABY"



"DORSELL'S"
MILK FOOD

Equals Grade "A" Milk

5 oz., 10 oz. and 16 oz. net. Decorated air-tight tins.
Retail Price .. 1/4, 2/- and 2/6.

2 oz. Samples free.

Liberal trade discount. Bulk in 56-lb. tins, 2 tins in crate, rail paid, at 112/- per cwt.

Manufactured by

PRIDEAUX'S FOOD ETC. COMPANY, LIMITED,

Pioneers of the Dried Milk Industry. Eight Creameries in Dorset, Somerset and Wilts.

London Office: 16 Southwark Street, S.E.1.

Send for Trade Terms and full particulars to:

PRIDEAUX'S FOOD etc. Co. Ltd.
MOTCOMBE, DORSET.



**BRAND'S
ESSENCE**

of Beef, Mutton or Chicken
consists solely of the juice of
the finest meats, prepared
with the greatest care under
the most hygienic conditions.

Essential in the Sick Room.

Sold by all Chemists and Stores.

BRAND & CO., LTD.

Mayfair Works, Vauxhall, LONDON, S.W.8.



Produced and Packed in
Devon (England) by
MILKAL Limited,
London and Devonshire.

*Selling Milk
by the Pound*

A Most Profitable Line for you to Handle.

The encouraging success following the introduction of Milkal Nursery Milk has fully justified the confidence of the producers—MILKAL Ltd.—in the merits of full-cream milk sold in powder form. Dried milk meets an urgent need in every household. Milkal is the most economical and convenient method of providing clean milk at any hour of the day or night. You sell Milkal by the pound, or half pound tin, and your liberal margin of profit is indicated as follows:—

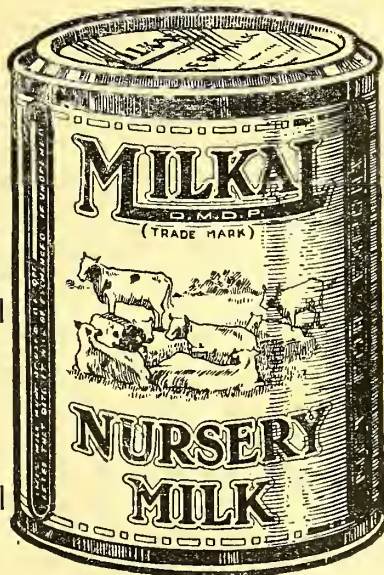
MILKAL FULL THE CLEAN MILK CREAM NURSERY MILK

		Wholesale		Retail
1-lb. size	-	2/9½	-	3/6
½-lb. size	-	1/5	-	1/9½

Stock taken
back and
Cash re-
funded at
any time.

*Milkal is
Milk in
Powder Form*

Full Cream Milk from Devonshire pastures—minus the water content. This fully describes Milkal—dried milk in a tin. Mixed with cold or tepid water, it is clean liquid milk again, tasting exactly the same as the liquid milk that it was in the first place. Milkal brings the Dairy into every home, providing nourishing milk suitable for Infant Feeding from birth and for every household purpose.



Distributed and Recommended by:—

J. LYONS & CO., LTD.
21 CADBY HALL, LONDON, W.

“Straight from Devon in a Tin”

Maltine

the DIGESTIVE NUTRIENT

Over Forty Years' Reputation

MALTINE (Trade Mark)
 MALTINE with COD LIVER OIL
 MALTINE with C.L.O. and HYPO.
 MALTINE with CASCARA
 MALTINE with CREOSOTE
 Etc.

MALTOLINE (Trade Mark)
 MALTINE with HYPO.
 MALTINE with IRON
 MALTINE with PARAFFIN
 MALTO-YERBINE (Trade Mark)
 Etc.

MALTINE MANFG. CO., 9, HOLBORN VIADUCT, LONDON, E.C.1

Maltoline

TRADE MARK

FRED^K. FINK & CO.,

10 & 11 MINCING LANE, LONDON, E.C.3.

SPECIALITIES.—Gums Arabic and
 Tragacanth as imported or finely powdered.

REAL SILVER LEAF

As supplied for many years to the leading Houses for Pills, Cachous, &c.

We also supply
GOLD LEAF AND GOLD POWDERS

WHOLESALE ONLY.

E. WINTER & CO., LTD.

Head Office: 64 Cheapside, London, E.C.2. Telephone: Central 935

PRECIPITATED CHALK

Lightest and Whitest, also Purest Dense

Apply to
Aug. Levermore & Co., Ltd. 8-10 Gt. St. Helens
 LONDON, E.C.3.

Telegrams: 'Levermore London.'

Telephone: Central 4613.

LYSOFORM

"THE DEMAND INCREASES DAILY."

DISINFECTANT & TOILET SOAP
 is being advertised extensively and should certainly
 be included with your next order. Ask our Repre-
 sentative or drop us a P.C. for particulars of our
SPECIAL CARRIAGE PAID WITH BONUS PARCEL,
 which secures you a most generous margin of profit.
THOS. CHRISTY & CO., 4/12 Old Swan Lane, LONDON.

PURE ORANGE WINE

A. MILLAR & CO., LTD., DUBLIN

(VINUM AURANTII B.P.)

Prepared in strict accordance with the Formula of the British Pharmacopœia.

(Wholesale only.)

Samples from Head Office, Thomas Street, DUBLIN, or London Office, 74 Great Tower Street, LONDON, E.C.3.

CELLULOID and BONE TOOTHBRUSHES

SAMPLES AND PRICES ON APPLICATION.

STANDARD BRUSH CO.

121a Bunhill Row,
 LONDON E.C.1.



The Key of Life

REGISTERED TRADE-MARK No. 432225.

A Few Reasons Why Your
Customers Ask You For

Bovo-Lactin

Perfect Concentrated Foods

- Because** Doctors are prescribing them to their patients in steadily increasing numbers in response to a vigorous campaign in the Medical Press.
- Because** In cases of acute illness they have demonstrated their efficiency.
- Because** In convalescence they have proved themselves to be of paramount importance in daily dietary.
- Because** They insure health in body, brain and spirits.
- Because** Children thrive on them.

Your Profit **33 1/3%** on Selling Price

Invalid Bovo-Lactin	..	..	..	3/9	P.A.T.A.	30/-	per doz.
Bovo-Lactin Essence	..	..	..	3/9	"	30/-	"
Bovo-Lactin Chocolate	..	..	..	3/6	"	28/-	"
Bovo-Lactin Gruel	..	..	..	2/3	"	18/-	"

Any further details regarding these preparations
will be gladly furnished on receipt of Post Card.

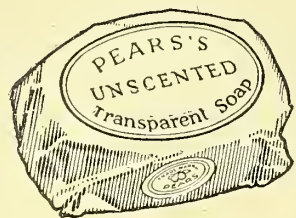
FOOD PRODUCTS, Ltd.

11 QUEEN VICTORIA ST., LONDON, E.C.4
Laboratory and Works - - Twickenham, England

Sole Distributing Agents for the United Kingdom and Ireland :

HENRY C. QUELCH & CO., 4-5 Ludgate Square, London, E.C.4.

Foreign Agency enquiries are invited.



Pertinent PARS

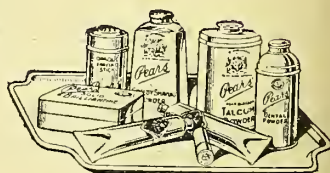
for
PHARMACISTS

Make it an invariable rule to cut out lines which stay long on your shelves and thus eat up your profits.

Profitable lines are not necessarily those which show a large margin—but always those which sell quickly. It is better to make two profits of 25% in two weeks than one of 50% in two months.

Stock Pears' Unscented Transparent Soap and Pears' Golden Series and you will achieve two desirable things—a quick turnover and a satisfied clientele.

Pears



71-75, New Oxford Street, LONDON, W. C. 1.

Holiday Time

Holiday time can be made to bring much profitable business for pharmacists. For instance, the holiday girl regards "HAZELINE SNOW" as being almost indispensable. Its cooling and non-greasy properties, its delicate fragrance and the fact that it can be used anywhere and at any time with benefit, make an irresistible appeal to her.

Secure your share of this high-class trade. Make bold and frequent displays, for "HAZELINE SNOW" attracts the best type of customer.

"HAZELINE" (Trade Mark) SNOW"

Creates profit and prestige

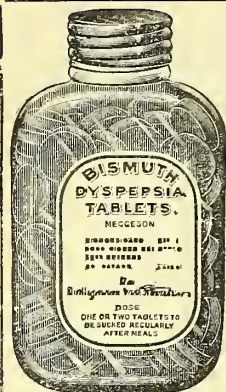
Glass
pots with alu-
minium screw
caps, at 15/- per doz.
(subject). Show
matter free on
request



BURROUGHS WELLCOME & CO.

11, SNOW HILL BUILDINGS

LONDON, E.C. 4



BISMUTH DYSPEPSIA TABLETS

(MEGGESON)

SELL READILY ALL THE YEAR ROUND.

YOUR PROFIT IS RIGHT.

P.A.T.A. 1/3

**Showcards, Showboxes,
and a Bonus of 1 dozen
with each gross.**

9/- dozen
108/- gross



Established over 100 years

CARRIAGE PAID.

MEGGESON & CO., LTD., BERMONDSEY, LONDON.

The *Lancet* describes it as "Mr. Bengers' admirable preparation."

FOOD FOR INFANTS

BENGER'S
GOLD MEDAL AWARDED HEALTH EXHIBITION, LONDON
Wholesale of all Wholesale Houses and Shippers

Wholesale of all Wholesale Houses and Shippers
or from the Manufacturers

BENGER'S FOOD LTD., Otter Works, **MANCHESTER, Eng.**

Branch Offices at: 117 Pitt St., Sydney, Australia: 90 Beekman St., New York, U.S.A.
Canadian Agents: The National Drug and Chemical Co., Ltd., Montreal and Branches.
SHOWCARDS AND HANDBILLS ON APPLICATION.

The British Medical Journal says:
"Benger's Food has by its excellence established a reputation of its own."

INVALIDS AND THE AGED.

CHRISTY'S TOILET LANOLINE



In Collapsible Tubes.

No. 7 (P.A.T.A. 7d.) ... 4/9 doz.

No. 9 (P.A.T.A. 1/-) ... 6/9 doz.

No. 10 (P.A.T.A. 1/4) ... 9/3 doz.

In Oval Pots with Aluminium Lid
and Two-coloured Label.

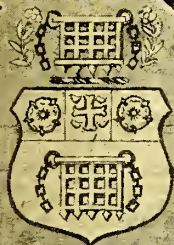
Retail 1/- 7/- doz.

Prepared from a specially high-grade Lanoline. A delightfully smooth Cream, delicately perfumed, which can be recommended with every confidence of securing repeat orders.

*Gives satisfaction to the Customer by reason of its quality
and to the Chemist by reason of the profit obtained.*

THOS. CHRISTY & CO. ~ ~ ~ ~ 4-12 Old Swan Lane, LONDON, E.C.4

THE CHEMIST & DRUGGIST



Conference Number

JULY 28, 1923

Published at the
Head Office: 42 CANNON ST., LONDON, E.C.4.
 Branch Offices: Manchester; and Melbourne and Sydney,
 Australia.

Subscription, 20s. per annum to any part of the world,
 Single copies, 9d. each.



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No. 4

Series 2270

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Wills

MR. ARTHUR REYNOLDS NEAVE, chemist and druggist, 3, Beaufort West, Bath, who died on May 21, left estate of the gross value of £2,634 16s. 2d., of which £2,050 3s. 2d. is net personality.

MR. OSWALD GATWARD, retired chemist and druggist, 25 Bearton Road, Hitchin, who died on April 2, intestate and a bachelor, left estate of the gross value of £3,198 14s. 7d., of which £3,159 3s. 7d. is net personality.

MR. SAMUEL LLOYD STACEY, J.P., chemist and druggist, 45, Fellows Road, South Hampstead, London, N.W., of Corbyn, Stacey & Co., Ltd., who died on May 5, left estate of the gross value of £4,149 11s. 11d., of which £3,922 0s. 6d. is net personality.

MR. HENRY PARISH, "Hafod," 8 Grange Road, West Bromwich, formerly carrying on business as a chemist and druggist in Birmingham Street, Oldbury, and as a preserve manufacturer at Bromford Lane, who died on February 12, left property of the value of £30,707 11s. 11d., with net personality £16,837 11s. 2d.

MR. FRANK BRETTELLE, chemist and druggist, is opening a business, The Rhos Pharmacy, 2 Colwyn Avenue, Rhos-on-Sea.

MR. CHAS. DAVIES, chemist and druggist, late of Old Kent Road, has purchased the business lately carried on by J. G. Cobb at 194 Trundleys Road, Deptford.

MR. FREDERICK B. GRAY, chemist and druggist (of Manchester), has purchased from J. & J. Clemishaw, Ltd., the old-established pharmacy at 10 Water Street, Bury.

English and Welsh News

Dangerous Drugs Act, 1920

Supply of Drugs to Ships

Notice is given under the Rules Publication Act, 1893, that the Secretary of State for the Home Department proposes, after the expiration of forty days from this date, to make a Regulation under Section 7 of the Dangerous Drugs Act, 1920 (10 & 11 Geo. 5, c. 46), amending Regulation 15 of the Dangerous Drugs Regulations, 1921 (S.R. & O. 1921, No. 865), which relates to the supply of the drugs to which the Act applies to the masters of merchant ships.

Withdrawal of Authorisation

The Home Secretary gives notice that he has withdrawn from Charles Gilroy King, L.R.C.S., M.B., C.M., D.P.H., of 1425, Pollokshaws Road, Glasgow, a duly qualified medical practitioner, the authorisations granted by the Regulations made under the Dangerous Drugs Act, 1920, to duly qualified medical practitioners to be in possession of and supply raw opium and the drugs to which Part III of the said Act applies.

Golf

A golfing contest between Sunderland and South Shields pharmacists took place at Cheadon on July 18, with the following result:—

Sunderland		South Shields	
R. C. Thurstield	1	S. Darke	0
F. Armstrong	0	C. Mason	1
T. Armstrong	1	T. B. Rowell	0
R. Anderson	1	E. Michelson	0
F. Harrison	0	W. P. Mason	1
J. G. Harrison	1	J. A. Carr	0
	4		2



Back Row (left to right).—E. Michelson, T. Armstrong, C. Mason, R. Milburn, J. A. Carr, R. C. Thurstield, S. Darke.
 Front Row (left to right).—E. Anderson, J. G. Harrison, F. Armstrong, J. Carr, W. B. Rowell, F. Harrison.

Birmingham

Complaint is made in the local Press of the large number of cats which is being poisoned.

The fund for victims of the Hockley flood, referred to in the *C. & D.* last week, has reached £1,468, to which Mr. and Mrs. Paul Cadbury have contributed £10. Cadbury Bros., Ltd., Bournville, have subscribed £100 to the Lord Mayor's Hockley Brook Flood Fund, and Mr. and Mrs. Barrow Cadbury (Mr. Alfred Southall's daughter) a like amount.

The Municipal Technical School has just completed a successful session in the pharmacy department. At the July examinations in London the twelve Birmingham students who entered for Part I. of the Qualifying examination were successful, and the same happened to the three candidates in Part II. The all round average success was 30 per cent., as against 20 per cent. at the official school.

Liverpool

"Boot" pharmacies are devoting window space to a "perfume sale."

"The quietest Saturday for eight years" was the business note at a central area pharmacy on July 21. Delegates to the London Conference realised that a suitable week had been chosen.

Manchester

A party of twenty chemists and their wives left Manchester on Monday to visit the Conference in London, travelling together by the train that arrived at St. Pancras at 1.45 p.m. The party included Mr. and Mrs. Dickson, Mr. and Mrs. Eastwood, Mr. and Mrs. Cleworth, and Mr. W. I. Scholes (Eccles).

Mr. Norman Edwards, son of Mr. R. G. Edwards, Vice-President of the Manchester Pharmaceutical Association, has passed the final examination for the degree M.B., Ch.B., of the Victoria University, Manchester. He has had a very successful career, in the course of which he gained the Dauntsey medical scholarship, Tom Jones anatomy prize, University medical prize, and the Platt physiology prize.

Sheffield

Mr. A. L. Manton, chemist and druggist, has taken over the business at 131 Matilda Street.

During a heavy thunderstorm at Rotherham last week, the basement of the premises of Mr. G. F. Shepherd, chemist and druggist, 123, Wellgate, was flooded. The basement contained a large stock of drugs, turpentine, methylated spirit, etc., and damage was done estimated at £150.

The National Association of Medical Herbalists of Great Britain held their annual conference this year at the King's Head, Sheffield; the proceedings opened on July 18. To a Press representative the secretary (Mr. Chas. Burden) said the Association wish to make registration compulsory in the same way as it was with doctors, dentists and chemists. Members of the Association, he pointed out, already have to pass an examination in medical and botanical subjects.

Miscellaneous

NEW VIROL FACTORY.—A reception was held on July 20 at the new factory of Virol, Ltd., at Hanger Lane, Ealing, when a large number of nurses were shown over the works and saw the process of preparing and bottling Virol and Virolax.

ANTHRAX IN A SHAVING-BRUSH.—At an inquest held at Bradford, on July 25, on the body of Arthur H. Denison, warehouseman, it was stated that the cause of death was anthrax from a shaving-brush, which had been disinfected by the manufacturers. Dr. Legge said the method of disinfection prescribed by the Home Office was effective, and that in this case there must have been some breakdown or defect in it, or the hair must have been contaminated by another lot of hair.

Irish News

The Intoxicating Liquor Act

The following circular has been addressed by the secretary (Mr. W. J. Stevenson) to members of the Ulster Retail Drug Trade Association, by direction of a special meeting held under the presidency of Mr. Andrew Wilson:—

I am instructed to issue the following information with reference to the sale of wines and methylated spirit under the Intoxicating Liquor Act (Northern Ireland), 1923. The appended questions were submitted to the Home Office:— (1) Are pharmaceutical chemists, chemists and druggists, and registered druggists entitled to sell wines (all brands) up to end of September 1923, provided they hold "off" wine licences? (2) Can pharmaceutical chemists, chemists and druggists, and registered druggists, holding an "off" wine licence open their premises for ordinary business before 10 a.m.? If so, will it be necessary for all wines to be removed from exposure for sale until said hour? (3) Are quantities of methylated spirit (over one gallon and under 4 gallons operative) outside the provisions of this Act? (4) Define Section 4, clause, "... and shall affix to every bottle or vessel containing methylated spirit so purchased a label bearing the name and address of the seller and the name and address of the person making the sale." (5) Can a female apprentice under the age of 18 years conduct a sale of methylated spirit?

In the reply from Home Office, the Minister of Home Affairs said he feels it would create an undesirable precedent if the Ministry were to advise persons concerned as to the effect of the Act, but the official in the Home Office expresses his own views on the points raised as follows:—(1) Yes. (2) I think chemists, etc., holding an "off" wine licence cannot open their premises before 10 a.m. (3) The Act does not apply to the sale of methylated spirits unless they are specially mentioned, as in Sections 4 and 8 (1). It seems to me that Section 4 (1), which deals with sales by retailers of methylated spirits, is quite clear. (4) The person making the sale means the assistant or other person who actually carried out the sale. (5) A female apprentice under the age of 18 can conduct a sale of methylated spirits.

Brevities

The Irish Revenue Commissioners are prepared to allow chloroform and sulphuric ether to public hospitals without payment of duty, on compliance with the Commissioners' regulations.

The first prosecution under the recent legislation regarding the sale of methylated spirits by chemists was heard at Omagh, co. Tyrone, on July 23, when a charge of making a false application to obtain methylated spirits on July 11 from the pharmacy of McAdam & Bates, Ltd., 41 High Street, was preferred against James Maguire, Mountfield, at a special court. James Maynes, Omagh, was prosecuted for aiding and abetting in the offence. The bench dismissed the case against Maynes, but Maguire was fined 40s. and costs.

Belfast

At Belfast Assizes, on July 21, James Mullan, Durham Street, charged with the theft of a quantity of oil, carbide, soap, white lead and a number of empty barrels, the property of Kincaid & Co., manufacturing chemists, Hamilton Place, with whom he had been employed, was found guilty and sentenced to six months' imprisonment with hard labour. Four men indicted for receiving were found not guilty and discharged.

The following representatives have been selected by the various trade organisations to attend the conference convened by the Ministry of Home Affairs in Northern Ireland with reference to the present position of the pharmacy and drug trades in Northern Ireland:—Ulster Retail Drug Trade Association, Mr. Andrew Wilson, Ph.C. (President), and Mr. J. Moffett, R.D.; North Irish Pharmacists' Association, Mr. Matthew McDonald, Ph.C. (President); Chemists' and Druggists' Society, Mr. Fred Storey (President). The Pharmaceutical Society of Ireland has also been invited to send a representative, and Mr. W. J. Hardy, Ph.C., Belfast, will attend. Mr. Meeke, Dublin, will also be present at the conference, which will be held in private.

Dispensing Tested

At Marylebone Police Court, London, on July 25, a summons was taken out by the Hampstead Borough Council against Mr. Harold Colin Jenkins, chemist and druggist, 190 Broadhurst Gardens, West Hampstead, for having sold a compounded drug, to wit, iodide of potassium, containing 8 grs. in each ounce of the mixture instead of 10 grs. (*C. & D.*, July 14, p. 43). Mr. Maconachie prosecuted, and Mr. H. Glyn-Jones defended. In opening the case Mr. Maconachie stated that the defendant made up a prescription which the medical officer of health for Hampstead had ordered, and it was seriously faulty. This was a prescription made out on one of the London Insurance Committee's forms. Counsel added that no complaint was made as to the other ingredients.—Dr. Skrase, the medical officer, giving evidence, said that the iodide was the most important drug in this medicine.—The Magistrate asked what it was for.—The doctor replied that it was prescribed for rheumatism, gout and venereal disease, and was the remedy par excellence for syphilis. It was a most important drug.—Mr. Maconachie: If the patient received 16 grs. less, might that be a serious matter?—I think that is a serious deficiency.—It might invalidate the value of the medicine?—I think it might.—Cross-examined by Mr. Glyn-Jones, the doctor said the prescription was written in Latin, or dog-Latin. The Latin for "grain" was "grain. Mr. Glyn-Jones: I suggest that "granum" is and that the plural is "grana"? Dr. Skrase said he did not know, but if counsel said it was he would agree.—Mr. Glyn-Jones suggested that if the plural of "grain" was "grana," then the abbreviation "grs." in the prescription was not correct; but the witness insisted that it was, and said he always wrote "grs." for "grains." Counsel pointed out that in one place ordering five grains the doctor had written "gr." "So that you don't always write grs.," said counsel. "Gr., I put it, is the correct abbreviation?"—The doctor disagreed. Counsel: Then you do sometimes make a mistake and put gr. and grs. in the same prescription, do you?—Oh, yes. Iodide of potassium averaged up to as much as 30 gr. for a dose, the witness admitted in further cross-examination.—Mr. Maconachie (re-examining): You have had considerable medical experience for many years; have you had any difficulty in getting your prescriptions understood by chemists?—Oh, no.—Even "gr." or "grs." would be intelligible to chemists?—Quite. Mr. Glyn-Jones said the defence was that this was an ambiguous demand.—Mr. Jenkins, the defendant, giving evidence, said he was a qualified chemist, with a business experience in Carmarthen, Wales, of five years, and nine months on his own account in Hampstead. No complaint had ever been made against him before, under this or any other Act. Referring to the prescription in question, he said there was a down stroke with a dot above it immediately before the V. of five. He observed that when the prescription came in and he read it as IV., and dispensed accordingly. The Magistrate observed that the down stroke was quite separate from the V, and said he should have thought if the defendant read it as IV he ought to have read the next figure as nine. Mr. Jenkins said he discussed the matter with his assistant and came to the conclusion that what was intended was four grains. In his experience, he continued, doctors generally wrote gr. as the plural of grains, and in most of the large number of the prescriptions he had dispensed the abbreviation gr. was used. The Magistrate: And grs.?—In prescriptions that are written in English, not Latin. He added that in the prescription the date had been obliterated and reinserted; the name of the prescriber was illegible and the name of the patient could not be read. Mr. J. E. Langford Moore, chief pharmacist at St. Bartholomew's Hospital, asked by Mr. Glyn-Jones if it was unreasonable on the part of Mr. Jenkins to read the prescription as 4 grains, replied that he did not consider it at all unreasonable. Looked at from a distance of 2 feet it looked exactly like four. The Magistrate: Supposing your attention is called to it and you examine it carefully?—Mr. Moore said he showed it

to his twelve assistants, and their opinion was that they would have referred it to him before making it up. That is, they would regard it as ambiguous?—Yes, and for that reason would refer it to me. And what would you say?—I should say five. To a certain extent, he said, he should be assisted to that conclusion by looking at the next item. It was the dot that made him and his assistants think, on looking at it from a distance, that it was four. Mr. Moore said the custom in writing the plural of grain in a prescription was to put "gr.," and strictly speaking "grs." was not correct, though it was sometimes used. In cross-examination he agreed that if "grs." was used any chemist would know it, and if he read at a less distance than 2 feet he would see it was 5, and not 4. "I said it was not unreasonable that he might interpret it as four," added Mr. Moore. Mr. Wm. Johnston, Ph.C., agreed with the last witness that the amount might not unreasonably be read as four grains, and said it might very well be read as either 4 or 5. It was a "toss up" which way to read it. Mr. Glyn-Jones was in the act of submitting, for the defence, that it was a condition precedent to a prosecution under this Act that the demand of the prosecution should be expressed in absolutely clear terms, when the Magistrate intervened, saying he thought counsel was going to say what he was prepared to say himself. Personally, he said, reading that prescription, he should at first sight say it was a five; then, if any doubt was raised about it, and he examined it more carefully, he should still say it was a five, and should not think it was a four. But another man might, especially when looking at it he saw that the letter which was meant to be an S, was drawn much more like a straight hook—much more like the figure I. The person who wrote it no doubt never intended to put a dot over the "i," and perhaps never did; still, there was a little mark on the paper exactly like a dot, and although that might be a mere misfortune, it might be misleading to the person who had to interpret the prescription. As counsel was about to say, a prescription which might lead to the prosecution of a man in a matter that might seriously affect his business and reputation, ought to be absolutely unambiguous. It was not fair to him to send him a prescription as to which there was any possibility of mistake. Here there was not only a possibility, but people who knew much more about the subject than he did and were not at all interested in this case, had stated, as experts, that, to say the least, a person misreading that document would not, in their opinion, be to blame. Under the circumstances, it would be unfair to convict the defendant, and which, after all, was a criminal offence, merely because he misread the prescription, and, in consequence, made up a medicine with one of the ingredients short in quantity. He should, therefore, acquit the defendant and dismiss the summons. Mr. Glyn-Jones urged that as by the magistrate's finding it was carelessness that had led to the prosecution, he was clearly entitled to costs. He also pointed out that he had foreshadowed his defence at the previous hearing. Mr. Maconachie opposed the application, but the magistrate replied that the failure of the prosecution arose from the fact that the prescription was not legible, and under the circumstances he granted the defendant five guineas costs against the Hampstead Borough Council.

ROYAL PHARMACEUTICAL ASSOCIATION.—The King of the Belgians has authorised the Pharmaceutical Association of Bruges to adopt the designation "Royal Society."

AN AGREED ORDER.—In the Chancery Division of the High Court, London, on July 20, the case of the Scholl Manufacturing Co., Ltd., v. Bush & Co. was mentioned. Counsel for the plaintiffs said it was an action in which his clients were seeking to restrain the issue of advertisements and circulars by the defendants relating to foot supports not of the plaintiffs' manufacture. The parties had come to an arrangement staying all proceedings, and there would be an agreed order in which the defendants gave certain undertakings. Mr. Justice Lawrence concurred.



To a veteran of pharmacy, with reminiscences of the holiday feeling which permeated the atmosphere of former International Congresses of Pharmacy, the general meeting of the International Pharmaceutical Federation, which opened on July 23, in the Hotel Great Central, Marylebone, London, made it impossible to avoid the reflection that the present assembly bore the impress of the times in which we live. In the place of a huge concourse of pharmacists of divers tongues and nationalities, animated by the desire to combine pleasure with profit—to renew old friendships, make new acquaintances, hear the views of others and possibly participate in the discussions, but all the while conscious of the motive which impelled one and all to gather together: to contribute towards the advancement of the profession of which each was a member—we have in the meeting of the Federation a session of an essentially practical body, a small, business-like central organisation representative of all the professional associations throughout the globe. Not only its statutes, but the conception upon which the Federation is based, design it to be the link between all pharmacists, not a mere symbol, but an effective expression of the community of professional interests. Following a meeting of the Bureau in the morning, the delegates and members of the Federation, numbering about fifty (their names are given on p. 158), met in the afternoon in the Regent Suite, the President, Professor Dr. L. van Itallie, in the chair, supported by Dr. J. J. Hofman, Secretary-General, Dr. A. Schamelhout, Secretary, Mr. E. White and M. J. Loisel, Vice-Presidents, and Mr. E. T. Neathercoat, C.B.E., President of the Pharmaceutical Society. The proceedings were opened at 2.20 p.m. by Professor van Itallie, who, in reading his

PRESIDENTIAL ADDRESS

in English, said:—

The meeting of the Comité Central de la Fédération Internationale Pharmaceutique offers not only the opportunity to consider the problems we have at heart, to resume old friendships, to form new relationships, but also, as the seat of our meetings every year is transferred, to widen our horizon, to obtain new impressions and to enrich ourselves with the results obtained on the range of pharmacy under conditions differing from ours. Therefore we accepted with pleasure and great gratitude the friendly invitation of the Pharmaceutical Society of Great Britain, and I consider it a privilege to bid you a cordial welcome in this Metropolis, where there is room for all the expressions of the human spirit, where arts and science as well as economic problems call the attention, where worlds flow together and buildings and institutions even speak to those who gathered with us from all corners of this country and of the Continent. The external aspect of life may not so much differ from that in other capitals of the first rank, but the autonomy in which in England many institutions proceed for the common good exerts her influence in a manner strongly contrasting with that of corresponding institutions in other countries. I refer to the Universities and the higher educational institutions founded and supported

in other countries by the state or municipality and in this country by special corporations. I also refer to the special way in which societies—as, for instance, the Pharmaceutical Society—take an active part in the range of scientific education and research, the regulation of the profession and the care for the fulfilment of the chartered provisions. I do not intend to go far into the question which of both systems is to be preferred, and I will not even make any comparison, especially because to solve the question a deeper insight in the various national characters would be necessary; and the time I have at my disposal would not suffice even for a superficial discussion of the subject. Moreover, the programme of our meeting is so well filled that I must exercise some restraint; after all, some of the points I mentioned have a chance of being discussed in a more spontaneous way. I am sure you expect from the Chairman, who has the honour to preside at this meeting, a short introductory address on a subject of more general interest for this audience, and I hope you will permit me to make some observations in regard to the International Pharmacopœia. There is no other question of so great importance to all chemists as the compilation and the contents of this book, that has come to be our daily companion and an indispensable guide for the exact practice of the pharmaceutical profession. The problem of an International Pharmacopœia lacks the merit of being a new one. It is not necessary to write the history of the attempts made to attain the object of so many desires. The history is dealt with in numerous papers, and I myself mentioned it when opening the 11th International Congress of Pharmacy in The Hague. The call for an International Pharmacopœia has hitherto not been fulfilled; a wish for its attainment has been repeated again and again, and the agenda of our meeting mentions more than one item in connection with the question. Moreover, I have but to remind you of our conference of last year, in which the way to an international secretariat was discussed, and also the meeting of pharmacologists in Edinburgh at this moment, where, if time permits, pharmacopœial questions will be treated. In our days, with the increasing traffic between the peoples, the lack of an International Pharmacopœia is an anachronism. It is true we have the Convention of Brussels of 1906, giving directions for a restricted number of medicines. We are very grateful for this beginning, but it only gives partial satisfaction. The resolutions passed at Brussels have survived the average term of life of a pharmacopœia. They need correction on several points and extension in every way. Experience only comes with time; the advance of science on the territory of materia medica calls for the continuation of the international co-operation commenced so effectively. If this continuation fails to come, the work initiated in Brussels is marked for destruction. But there is more that calls for our attention. Nearly every country possesses its own pharmacopœia, which needs to be revised periodically. I myself, as the President of the Committee for the Pharmacopœia of the Netherlands, know by experience the amount of work connected with such revisions. Everywhere there is a cry for efficiency, and I ask you if it would not be possible to carry on the work for the whole world by a single committee instead of numerous commissions in the different countries, composed of men who have to do this work over and above their busy professional duties. I do not

allude to a pharmacopœia with 500 or 600 articles. In compiling an International Pharmacopœia limitation is necessary. By a committee composed of chemists, pharmacologists, clinicians and serologists a book of restricted size has to be compiled, which would be the standard pharmacopœia for all countries. It ought to contain not only the potent medicines, but also those which are in general use. A short description is not sufficient; where necessary the method of preparation, and in all cases the method of testing, must be given as completely as possible. The methods have to be fixed by elaborate research work. The preliminary draft for such a world-pharmacopœia should be published a year

before assuming its final form; there should be ample occasion for everyone to make observations of which the committee could make use in the final codification. If done in this way a standard pharmacopœia of limited size becomes a practical possibility and ensures that not only the standard of belladonna extract and of foxglove leaves is fixed, but also that important medicines, as, for instance, quinine, strophanthin and ether, possess in the whole world the same degree of purity. I do not anticipate difficulties in the accomplishment of such a work. Where there is a will there is a way. It could be published in Latin, but every government would be free to translate the work into the language of its country. And also the problem of an international nomenclature for the standardised medicines could be settled in an easy way. I fore-

see the objection that, in the manner sketched by me, the national demand for medicines is not satisfied. I shall not deny it. But we find already in nearly every country an official pharmacopœia and a national formulary side by side. They will continue to exist in the future, but the formulary will take advantage of the international work. The standard pharmacopœia once existing and giving rules for the official medicines, the national formulary will do well to align its prescriptions in every respect to those of the international work. It is all the more necessary, as in the standard pharmacopœia the methods of testing and standardising and the reagents will be described in such a manner that they are of general use. Conceived in such a way the International Pharmacopœia will be a universal gain, a benefit to humanity, a joy

to the hearts of those who, in providing medicines, have to fulfil a task in the interest of their fellow-creatures. I open this meeting with the wish that the attempts made by our Federation to attain the end I sketched to you will soon be crowned by full success.

Acting in his capacity as President of the British Pharmaceutical Society, Mr. E. T. NEATHERCOAT, C.B.E., extended a hearty welcome to London and to the headquarters of pharmacy in Great Britain. He said that the members of the Federation had met to commence a series of meetings which would represent the fourth general meeting of their executive bureau and the Central Committee of the Federation, and, to his mind,

by a most happy arrangement, had been so arranged as to coincide with the meetings of the sixtieth anniversary of the British Pharmaceutical Conference, which would start in London this week. He invited the members of the Federation to avail themselves to the full of the facilities which the Pharmaceutical Society of Great Britain could offer them, during their stay in London, and joined with Mr. Edmund White in the invitation which would be extended to the members to take part in the programme of social and other functions which had been arranged by the local reception committee. Also, he expressed the hope that their visit to London would be a pleasurable and enjoyable one, and that it would at the same time, be fruitful of great benefit to the objects — which were, of course, pharmaceutically



Photo]

THE FOREIGN DELEGATES TO THE
INTERNATIONAL CONGRESS OF PHARMACY.

[Cleworth.

of great international importance—which it was the main purpose of the Federation to promote and advance. We in Great Britain had been fortunate, in that we had been able to send delegates to previous meetings of the committee of the Federation, in various cities on the Continent, and we also considered ourselves fortunate in that we had, as a member of the Federation Executive Committee, and one of the Vice-Presidents of the Federation, a distinguished English pharmacist, and a colleague of his own, on the Pharmaceutical Council, Mr. Edmund White. Finally, he offered congratulations to the President of the Federation personally on the address he had just delivered, both in its matter and in the manner of its delivery, and again expressed the hope that the meeting would be attended with the greatest possible success.

Mr. Neathercoat was followed by Mr. EDMUND WHITE (Vice-President of the International Pharmaceutical Federation), who also expressed the hope, on behalf of the local committee, that the members of the Federation would enjoy their meeting, and assured them that the committee would do all it could to make their visit to London an agreeable one.

The PRESIDENT, in a few well-chosen words, returned thanks for the welcome accorded the Federation.

SECRETARY-GENERAL'S REPORT

The SECRETARY-GENERAL (Dr. J. J. Hofman) then read his report, in which he said that the general meeting of April 29, 1922, had re-started the work of the Federation, which had been interrupted for nearly nine years. Happily, the desire for co-operation, which was apparent before the war, had not been effaced; with renewed courage the work was recommenced. At that meeting the committee was reorganised: Professor Dr. L. Van Itallie was re-elected President; M. V. Haazen and Mr. Edmund White, Vice-Presidents; himself (Dr. J. J. Hofman), Secretary-General; and Dr. A. Schamelhout, Secretary; MM. J. Loisel and C. Bühner were elected Vice-Presidents; and M. Knut Sjöberg, Secretary, to replace Dr. H. Martin, Dr. H. Salzmänn and M. H. J. Möller. Many committees were formed to discuss items on the agenda, and to examine problems of international interest already before the Federation. In the first place, the Secretariat International des Pharmacopées was discussed, and Professor Van Itallie's report was adopted. The general meeting in 1922 had adopted the resolutions of the committee; and it was decided to send the report to the Belgian Government, the committees of the national pharmacopœias, and the national societies of pharmacy. The committee had sent a communication to the Belgian Government, asking them to call a conference of representatives of the different Powers to set up an International Pharmacopœial Secretariat. The societies were asked to agree to this, and to nominate delegates for an international conference. A reply had not been received from the Belgian Government, but he hoped that the Belgian delegates at the conference would be able to say something about it. The report of the committee for the organisation of the International Conference had been adopted. He was happy to be able to produce the proofs of the report of the Commission on International Pharmaceutical Nomenclature. The Commission on the Sale of Specialities had also terminated its work, a burning question in all countries. Later, the Federation hoped to deal with the question of pharmaceutical education. The report showed an increase of membership, which, in his opinion, showed a growing interest in the work of the Federation. The Federation now included sixteen national associations, represented by forty-eight delegates. The financial situation was satisfactory, and there was a balance in hand, but he pointed out that this year there would be extra expenses, and the resources of the Federation were diminished by the fall in the value of the franc. For this reason the committee proposed to increase the subscription, or rather, that the subscription should be paid in Swiss francs or in Dutch currency. He was happy to be able to say that many members had paid their subscription in Dutch money, and that others had sent a supplementary contribution, which proved that in the future the Federation could count on its members, and that the success and progress of the Federation were assured.

The Secretary-General then read letters received from Professor Thoms, Dr. Heger, M. M. Vocatloh, and the Swiss Pharmaceutical Association, regretting their inability to attend, and expressing their appreciation of the Federation's programme of work; also a letter from M. D. Blumenthal (Latvia) referring to the question of education.

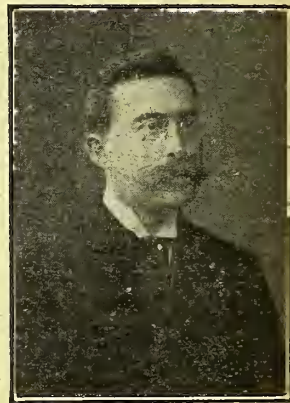
In referring to the proposal to increase the membership subscription, the Federation of Pharmaceutical Associations of Italy, in a letter, pointed out that it was unable to alter its budget for the current year, and therefore suggested that the higher rate of contribution should be enforced from 1924. Attached to this letter was a communication from Cav. F. Pratta, requesting the Federa-

tion to examine the question of the contribution to be paid by the members with due regard to the depreciation of the currency in various countries. Several proposals were also advanced to reduce expenditure. Further, a request was made to publish a list of all the professional and trade journals, as well as of other scientific journals of interest to pharmacists. Appended to this letter was a suggestion embodied in a *questionnaire* to be sent to the affiliated Associations in each country with a request for information on a variety of subjects of professional interest, such as: curriculum; pharmaceutical examinations and degrees; existing legislation affecting the exercise of the profession; whether drug tariffs are in force and whether these are satisfactory; what is the status of the pharmacist, his legal position and the popular attitude towards the profession; conditions of ownership, management, and *personnel*; sale of specialities, dietary preparations, children's foods, etc.—whether and which of these classes of goods may be sold exclusively in pharmacies; dangerous drugs legislation; do pharmacists in rural districts receive a subvention; system in force of providing medicines to hospitals and to paupers; and, finally, whether pharmacy is conducted on the basis of a profession or of a commercial enterprise. The PRESIDENT remarked that the replies would afford a fund of interesting information, but would entail an investigation extending over several years.

NEW MEMBERS

The following new members were thereupon elected: Société Panhelénique des Pharmaciens de Grèce (delegate: Professor Dr. E. Emmanuel); Pharmaceutical Society of Victoria (delegate: Mr. C. L. Butchers); Syndicat des Pharmaciens Luxembourgeois, as effective members, while the following were admitted as associated members: Señor Valles y Ribo, Mr. C. T. Bennett; Mr. H. Finmore, Mr. A. J. Jones, Mr. H. B. Stevens, O.B.E.; M. Renato Mazloum, Vitalis Mazloum Bey, M. V. Cofman, and Miss Elsie Hooper.

Following the election of new members, the Vice-President, Mr. E. WHITE, presented the balance-sheet of the Federation. Professor VAN ITALLIE thereupon proceeded to deal with the next subject on the agenda, viz., the proposal to fix the annual subscription at 50 Dutch florins, or 100 Swiss francs. A prolonged discussion ensued, which was opened by M. COLLARD (France) suggesting that the members belonging to "rich" countries, i.e., with a high rate of exchange, should pay a little more than those of "poor" countries, where the currency had suffered depreciation. M. PATTOU (Belgium) expressed himself against the suggestion to base the contribution on gold francs, and urged that the new rate be introduced not this year, but from 1924. Cav. PRATTA (Italy) drew attention to the fact that a higher subscription is heavier to bear the poorer the country—"an old man does less work than a youth of twenty." M. BOUVILLE (France) remarked that, since pharmacists work in the interest of public health, the several Governments might be induced to extend financial assistance to the Federation; to which the PRESIDENT replied that attempts in this direction had proved fruitless, and only the Dutch Government has for several years contributed an annual grant of 1,000 florins. The SECRETARY-GENERAL stated that, with the exception of Holland, no assistance had been forthcoming from other Governments, and suggested that each Association should approach the Government of its country in this matter. Dr. SCHAMELHOUT (Belgium) was not hopeful of success, since every Government was bent on cutting down expendi-



PROF. DR. L. VAN ITALLIE
(President of the International
Pharmaceutical Federation).

ture. M. LANGRAND (France) suggested that a sliding scale be introduced for each country, with an index to fix the amount to be paid in national currency, while M. COFMAN (Rumania) proposed the adoption of the scale laborated by the League of Nations.

Turning to the next subject, the PRESIDENT presented the

Report of the Commission on Pharmaceutical Nomenclature

THE Commission on Pharmaceutical Nomenclature, appointed at the general meeting of the International Pharmaceutical Federation in 1922, has studied the following sixteen Pharmacopœias: Great Britain and United States of America (Anglo-American type); Belgium, France, Spain and Italy (French type); Denmark, Finland, Norway, Holland, Sweden (Northern type); Germany, Austria, Hungary, Russia and Switzerland (German type). In order to establish a comparative summary of the Latin designations adopted in these pharmacopœias, it was deemed advisable to divide the official medicaments into three categories:—

- A.—Chemical medicaments possessing a definite formula.
- B.—Drugs of vegetable or animal origin, together with their juices or natural products.
- C.—Compounded medicaments, galenic and official preparations, as well as all other products not belonging to the two first categories.

Part A includes every chemical compound included in any of the sixteen pharmacopœias. Part B embraces all the plants included in these different pharmacopœias. Part C, on the other hand, does not contain all the medicaments, which should be included therein, for the following reason: There are a certain number of preparations which are common to several pharmacopœias, or which are practically identical in composition. These preparations might be included in a comparative study. However, a large number of other compounded medicaments exist which occur exclusively in one or the other of these pharmacopœias and which do not possess any (or scarcely any) point of contact with preparations of the same kind included in other pharmacopœias. No comparison is possible between articles which differ widely. On the other hand, it is useless to attempt to group under a single heading preparations differing in composition, although they frequently possess the same therapeutic properties. For this reason they have purposely been omitted. This leads us to state that the Commission wish it to be clearly understood that in the present report similarity of name does not necessarily imply identity of composition. As will be seen, the same medicament is designated by different names in the various pharmacopœias, and the aim of the work undertaken by the Commission has been to emphasise the differences in designations, but it does not follow that although the same name is used in several pharmacopœias there is a certainty that the so designated products are also identical. A striking illustration of this point will be found in studying the article acetic acid and its dilutions. The International Pharmacopœial Secretariat may possibly be able to introduce some order in the existing chaos, but the Commission on Nomenclature is not empowered to discuss formulas. It has been entrusted solely with the task of recording the actual situation in regard to designations, with the object of demonstrating to all the necessity of a unification of names. Since the work of our Commission has been limited to the study of names, to the exclusion of an investigation of the composition, it was decided to omit in the lists the various forms in which the same medicament figures in pharmacopœias with certain distinctions, such as *purissim.*, *depurat* or *purificat.*, *fortius* or *mitius*; *concentrat*- or *dilut.*; *solut.*, liquid or liquefact.; *sicc.*- or *exsicc.*; *lævigat.* or *præcipitat.* Concentrations, degrees, dilutions and solutions were found to differ appreciably in the various pharmacopœias, and it remains for the Pharmacopœial Secretariat to attempt to regulate the proportions.

LIST OF DESIGNATIONS IN USE IN THE DIFFERENT PHARMACOPŒIAS INDICATED BELOW.

A=PART I

Chemical Medicaments

Note.—Not more than two designations have been taken into consideration for the same substance, omitting the others. The principal, or sole, official designation is indicated by printing the name of the Pharmacopœia in capitals, while lower case type is used for the subtitle or Latin synonym. The Commission has adopted the order in which the names of the medicaments follow each other in the French Pharmacopœia. Since the pages are printed on one side only a file may be prepared by cutting out each article and pasting it on cardboard, thus enabling each country to arrange the list according to the order adopted by its own pharmacopœia. The Latin name is followed by its corresponding appellation in Esperanto, this appellation having been selected following the rules established by the Scientific and Technical Commission of the International Scientific Esperantist Association (Nomenklature de Kemio, Paris, 1913, 51 rue de Clichy, Paris IX).

The following examples will illustrate the style adopted in the list appended to Part I. :—

Acidum arsenicosum = *Anhidrido arsenita*; *Arseniko*.

Ac. arsenicosum: AUS—DAN—FIN—GER—HEL—HUN—NED—NOR—RUS—SV—FR—BEL.

Anhydridum arsenicosum: BEL—IT.

— arsenicosum: HIS—BRI. (?)

Acidum arseniosum: his.

Arseni trioxidum: US.

Stibium kalio tartaricum = *Tartaremetiko*; *Antimona kalitartato*.

Kalium stibio tartaricum: HUN.

Stibium kalio tartaricum: AUS—FR.

Stibio kalium tartaricum: bel—RUS.

Tartarus stibiatus: BEL—HEL—rus.

— emeticus: bel—hun—ned.

Tartaras antimonio potassicus: bel—HIS.

— stibii et kalii: IT.

— stibico kalicus: DAN—FIN—NOR—SV.

— kalico stibicus: NED.

Antimonium tartaratum: BRI.

Autimonii et potassi tartaras: US.

PART II.

DRUGS OF VEGETABLE OR ANIMAL ORIGIN

As has already been stated, the second part includes all the plants and drugs of animal or vegetable origin included in the pharmacopœias of the sixteen countries which we have studied. It, therefore, embraces, in addition to the plants used *per se*, some products of vegetable or animal origin, such as musk, isinglass, balsams, gum resins, etc., also some fatty oils, but the essential oils have not been included, since these would have uselessly encumbered our list; these, therefore, figure in the third part of our Report. The list has been arranged in alphabetical order, adopting the simple name of each drug. This designation is followed by one or more of its scientific appellations, as well as an enumeration of the various morphological designations included in the pharmacopœia, and the morphological name in Esperanto. In the course of our investigations we have found that a relatively large number of plants are official in only one or two pharmacopœias. We have included these in a separate list attached to the second part, including the scientific name, the pharmacopœia and the morphological name, where such exist. Authors' names have been intentionally omitted in connection with the scientific designations, as well as the species names, our work being intended particularly to emphasise as much as possible the differences in current appellations and their anomalies. A study of this second part shows that the greatest variety, as well as the widest fantasy, are to be found in the morphological nomenclature. A discussion by the Commission on Nomenclature or at a general meeting would prove very useful towards establishing the rules to be followed, which it would be of advantage to communicate to the Pharmacopœia Commissions of the various countries. The following

are examples of the articles included in the list appended to Part II. :-

Citrus limonum = *Citrono*.

Citrus medica—*Citrus limonum*.

Citrus limonum: FR.

Limonum: HIS.

Limoni fructus: IT.

Fructus citrei: HIS—IT.

Limonis cortex: USA.

Citri pericarpium: HUN.

— *medicæ fructum cortex*: IT.

Pericarpium citri: SV.

Cortex citri fructus: GER—HEL—RUS.

Cortex citri: NED.

Semen citrei: HIS.

Jalapa = *Jalapo*.

Exogonium Purga—*Ipomœa Purga*.

Jalapa: BRI—FIN—USA.

Jalapæ radix: HUN.

— *radicis tubera*: IT.

Jalapæ tubera: BEL.

Radix jalapæ: AUS—HIS—NED.

Tuber jalapæ: AUS—DAN—FIN—GER—HEL—NOR—RUS—SV.

Resina jalapæ: AGS—DAN—FR—NED—NOR—SV—USA.

C = PART III.

Compounded Medicaments.

As stated in the preface, this third part does not include all the compounded medicaments appearing in the sixteen pharmacopœias which were studied. It contains only those preparations which can be grouped together under a single heading, or which at least possess the same therapeutic properties. Once again we wish to emphasise that similarity in name does not imply identity of composition. For example, the title *Tinctura amara* is used to designate *Tinct. absinthii comp.*, as well as *Tinct. aloes comp.* and also *Tinct. amara*. This lack of precision has frequently made it impossible to classify correctly certain preparations, and here the Pharmacopœdium of Hugo Rosenberg (Freiburg) has often rendered us good services. The work published by our confrère, C. Rousseau, a member of the Commission, has proved a very useful source of information with regard to the corresponding designations in Esperanto (Poliglota vademecum de internacia farmacio. Librairie Centrale Espérantiste, 51 rue de Clichy, Paris). Preparations figuring only in one or two pharmacopœias have been omitted, except such articles as *Tabellæ*, *Gelatina*, *Oxytabellæ*, which possess some distinctive characteristics. Also, all preparations included in each pharmacopœia under the same title (*Cataplasma*, *Species*, etc.) have likewise been omitted. The large groups, such as *simple Extracta*, *Pulveres*, *Tinctura*, *Syrupi*, are represented by one type for each series, while the corresponding compounded preparations are specially mentioned as often as possible, except *Pilule*, which occur in extremely numerous variations. The Commission draws attention to the regrettable lack of precision in the following designations:—elixirium, liquor, mixtura, solutio, spiritus, and oleum, the latter being frequently used to designate atherolea. The following examples show the scope of the list appended to Part III. of the Report:—

Adeps lanæ cum aqua = *Lanolino kun akvo*.

Adeps lanæ cum aqua: BEL—DAN—FR—HEL—NED—NOR—RUS.

— *hydrosus*: AUS—BR—HUN—US.

Lanolinum cum aqua: BEL—IT.

Lanolinum: GER—HEL—HUN—NED—SV.

— *hydricum*: RUS.

Unguentum adipis lanæ: FIN.

Sapo medicinalis = *Sapo medicina*.

Sapo: US.

— *durus*: BR.

— *medicinalis*: AUS—FR—HUN—IT.

— *medicatus*: DAN—FIN—GER—HEL—RUS—SV.

— *officinalis*: BEL.

— *amygdalinus*: HIS.

— *oleaceus*: HEL.

DISCUSSION

M. ROUSSEAU, who was principally responsible for the work embodied in this report, suggested that a pharmaceutical commission should be appointed to select the definite name to be adopted for each article, this name

to be included as the uniform official title in all pharmacopœias. M. COLLARD questioned whether pharmacists were qualified to decide alone in this matter, and advised that, since all Latin names for medicines were invented terms, they should select the designations most in current use.

Mr. G. P. FORRESTER drew attention to the fact (mentioned in the Report) that identical titles are used by several pharmacopœias to designate official preparations differing considerably in strength, and instanced the acids in illustration of this point. Thus, "Acidum Aceticum" is applied without further qualification to an acid containing 33 per cent. and 100 per cent. of hydrogen acetate; the strength of "Acidum Nitricum" ranges from 70 per cent. to 25 per cent.; "Acidum Phosphoricum" and "Acidum Hydrochloricum" afford further examples. Further, differences in official assay methods give rise to divergent standards, a point particularly noticeable in the case of pepsin. In view of the confusion arising from the use of the same name to designate products differing in strength, he submitted that, in deciding upon a standard nomenclature, agreement should be reached regarding the adoption of uniform titles for products answering a definite standard.

After Dr. SCHAMELHOUT had suggested that a copy of the Report be submitted to the International Pharmacopœial Secretariat, the PRESIDENT proposed that it should be sent to all the national pharmacopœia commissions, a proposal which was adopted by the meeting, after expressing its thanks to the Commission, and especially to M. Rousseau, for the work embodied in the Report.

(To be continued.)

Recent Patents

Abstracts of specifications of recently-granted patents for inventions. The complete specification (1s. each including postage) of British patents can be obtained from the Patent Office, 25 Southampton Buildings, London, W.C.2, on quoting the name of the patentee and the number of the patent.

Aliphatic Arsinic Acids.—A process for preparing hydroxylated aliphatic arsinic acids by causing an alkali arsenite to react with an aliphatic hydrocarbon containing a halogen and a hydroxyl group, e.g., glycol chlorhydrin, epichlorhydrin, α -monochlorhydrin, or glycerin α -dichlorhydrin, on a solution of arsenious acid and sodium hydroxide. (Etablissements Poulenc Frères, 191,028.)

Activated Carbon.—Carbon is prepared from peat, lignite, sawdust or other carbonaceous material by saturating it with a solution of a salt of a metal, adding to the saturated material a solution of a soluble phosphate, phosphoric acid or a soluble carbonate and/or a silicate, carbonising the material in a retort, extracting the soluble matter and drying. (Count L. le Warner Hamon, 197,971.)

Phosphorus Pentoxide.—This is produced by burning phosphorus and causing the vapour to condense at a temperature above 125° C. and below 200° C. for the purpose of obtaining an agglomerated form of the pentoxide. When greater freedom from amorphous powder is desired some of the vapour is withdrawn through a filter and caused to condense in a separate chamber. (Sir R. Threlfall, 197,863.)

Supporting Lens of Folding Camera.—A device by which the lens support is pivoted on a shaft which is rigidly fixed to the slide block and having plane contact surfaces which are adapted to be highly pressed on the upper surface of the slide-block by the action of a resilient device acting on the wedges which, engaging between the rail of the slide-block and the ends of the levers rigidly fixed to the lens-carrier, determine at the same time the locking of the whole device. The resilient device is constituted by a spring tending to move apart two levers pivoted on the slide-block, the ends of which, having a double bevel, act as wedges and take up the play of the slide-block on the rails. (Baille-Lemaire & Fils, 189,439.)

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN

DELEGATES' MEETING

A MEETING of delegates from the various branches of the Pharmaceutical Society of Great Britain was held on July 24 in the Wharnccliffe Room, the Hotel Great Central, London.

Mr. E. T. Neathercoat, C.B.E., President, was in the chair, and extended, in the name of his colleagues on the Pharmaceutical Council, a hearty welcome to the delegates present. Each delegate, he said, had attended specially by appointment from the branch of the Society in the area in which he lived, and to this extent the meeting could be considered to be making pharmaceutical history, in so far that for the first time in the history of the Society there was a delegates' meeting in connection with the British Pharmaceutical Conference. The Council of the Society was perfectly certain that, providing it obtained the co-operation of the branches and of the delegates who were attending from those branches, the new organisation scheme of the Society could not fail to be an outstanding success in connection with pharmaceutical organisation.

BRANCH ORGANISATION

The President then reviewed the position as it was before the branch scheme was launched, and also previous schemes of organisation that had taken place at the instance of the Society. It could be said justly that the scheme under discussion went back to 1910, when organisation in pharmacy was seriously tackled by the Council. In that year the Society had established its Local Associations Committee, and, as a result of the work of that Committee, associations were formed much more rapidly in all parts of the country. In 1912 the first National Health Insurance Act was introduced. That caused a certain alteration to be made in the plans of organisation, and there were set up in all parts of the country associations of pharmacists on a county and county-borough basis. That went on for a year or so, and in 1913 the amendment of the Insurance Acts was passed, which set up Pharmaceutical Committees in all parts of the country on the same county and county-borough basis. Those Pharmaceutical Committees were endowed with funds, and are in existence to-day as an integral part of the organisation of pharmacists. About that time the first of the conferences of delegates from the associations was started. Then the war came, and things were in abeyance during the next four years. In 1920, just as they had got going again in connection with the Society's organisation, the Test Case known as *Jenkin v. the Pharmaceutical Society* came along. The judgment in that Test Case had altered the pharmaceutical position very materially and very seriously in many directions, and had altered the work of the Phar-

maceutical Society and the work which the Council had been attempting to do hitherto. That state of affairs caused a reorganisation, and a new plan had to be set in motion. That plan was the organisation scheme of the Society, which the delegates had met to discuss. The scheme was passed by the Council in 1921, and in 1922 was put into operation, and under that scheme, of course, branches of the Society had been formed in all parts of the country for the first time in the history of the Society. He supposed that when the scheme was first launched every pharmacist was saying, "Why form a new organisation of pharmacists in the local areas; you have your pharmaceutical committees, your local associations, branches of the Retail Pharmacists' Union,

Proprietary Articles Trade Association and all sorts of other associations in pharmacy, and why is it necessary to bring forward a new scheme which forms new branches or new associations of pharmacists in the local areas?" It was perfectly justifiable that that thought should have occurred to anybody who had given this matter any attention at all, and he would tell the meeting the reason which had prompted the Council to set up this new organisation. Anyone of them who had been dealing with pharmaceutical organisation during the past ten or fifteen years must have been convinced, particularly from the Pharmaceutical Society's point of view, that there was something wanting in the organisation of pharmacists. The local associations in many cases were considerably restricted, and they differed in the conditions and basis of their membership in all parts of the country. Some associations left out everybody who was not a pharmacist in business, others left out student associates, others confined themselves to pharmacists and assistant pharmacists—pharmacists in the retail

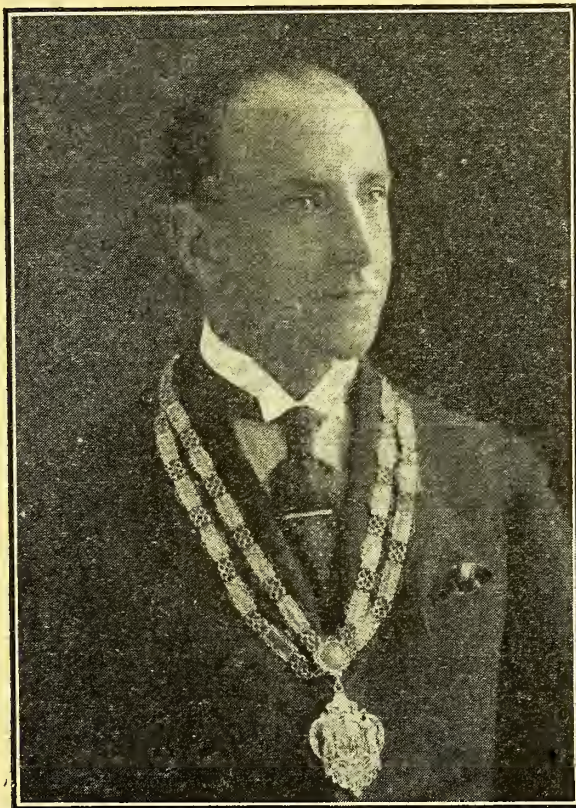


Photo.]

MR. E. T. NEATHERCOAT, C.B.E.,
President of the Pharmaceutical Society.

[Elliott & Fry.]

trade, he might say—and left out of account altogether pharmacists who were outside the retail side of the calling, those in wholesale houses, hospitals, teaching institutions, and so on. It was perfectly certain that if the Pharmaceutical Society is to be properly organised it must be on a basis which would include everybody who is entitled to be a member of the Society. The existing associations were wanting from that point of view, so that it was necessary, if the Society is to be centrally the pharmaceutical home of everybody which held its qualification, that there should be in all parts of the country a common rallying ground for every member of the Society and everybody who held the Society's qualification. If they could bring that about they agreed straight away that the Society stood for everybody holding this qualification. If it could be brought about, there would be in all parts of the country

a branch or an association which could rally together for the common purposes of their qualification. Everybody who held it, no matter what they might be doing with it—whether they were connected with a wholesale house, whether they were in the retail business, as employers or employees, whether they were in a teaching institution, or dispensing in a hospital or a public institution in that way—could then meet on common ground locally, and could consider and discuss matters which concerned that qualification alone. That was why it was necessary, in the opinion of the Council, that branches of the Society should be formed, and that was the essential particular in which these branches differed from all other local organisations of pharmacists hitherto formed.

FEATURES OF THE NEW SCHEME

Dealing with the other new features which were embodied in this organisation scheme of the Society, he had already said that, firstly, it mobilised for the advancement of pharmacy every member of the Society, in no matter what branch of pharmaceutical work he might be engaged. Secondly, it linked up with the organisation of pharmacists the student-associates in every case where there was a branch formed, the student-associates, of course, being the pharmacists of the future and the prospective members of the Society. The student-associates, in the main, had been ignored in local organisation matters in pharmacy. Also he considered, in the main, that that had been one of the weak places in our pharmaceutical organisation work. He was one of those who believed in getting them young; he believed that, if we secured the interest of the pharmaceutical student when he started his pharmaceutical career, by attaching him to his local branch of the Society, we had gone a very long way indeed towards securing his allegiance for pharmaceutical matters generally, and certainly in bringing him up in the way that the Society thought it best that he should go. Another feature of the scheme was that it made qualification and membership of the Society the basis of the union. There was no other condition of membership of the branch, and, providing a pharmacist was a member of the Society or a student-associate of the Society, he was at once a member of the local branch. If he held the Society's qualification, and did not happen to be a member of the Society—in his weakness, of course—then, by becoming a member, he was entitled to be a member of the local branch. This was a new basis in pharmaceutical organisation. At one time there was more than one opinion about confining the membership of the branches to members of the Pharmaceutical Society, but he did not think there could be two serious opinions with regard to it to-day. He was certainly one of those who held that too long had the Pharmaceutical Society and its members been carrying on their work for pharmacists—great work, in his opinion—in all parts of the country, whether members of the Society or not. Every pharmacist benefited by that work, and the time had certainly come when those who were sharing the benefit made possible by the contributions of their fellow-pharmacists should be forced, if they wanted to continue to share that benefit, to stand their corner and pay their way in the organisation scheme, so far as the Society was able to make them.

Another feature of the scheme was that it specifically defined the areas of influence and the functions of the branches. There was no boundary set up in this scheme except the boundary of accessibility of a meeting-place. The branches would not be confined by county areas or county-borough areas; provided the meeting-place selected was accessible, then all members of the Society living in the towns and villages around that centre were placed into that branch.

Still another feature of the scheme was that it furnished, again for the first time in pharmaceutical organisation, a real bond between the localities and the headquarters of the Society—a real and tangible bond, which was represented by the capitation grant. Under the scheme every branch secured, in respect of every member and every student-associate in that branch, a capitation grant of 2s. 6d. per head per annum. That

was a contribution from headquarters to the local organisation work which the Society would expect the branch to do for it. It was a feature which would appeal to a good deal of the hard-headed business men who represented the branches throughout the country. Pharmacists in all parts of the country had been sending up yearly their subscriptions to the Society, and that had been going on for a great number of years, but this was the first time that any one of them had known the Society to give any of it back in real cash. (Laughter.) The Society had given it back in kind—(hear, hear)—duplicated over and over again; they were still going on with the duplication of the kind, but were also handing back hard cash for the work of the local branch. The scheme also afforded an annual opportunity for the expression of local views by direct representation of the delegates at a conference meeting. That aim was being exemplified and carried out at the present meeting, and the Society was hoping to make this conference of delegates a most useful part of the organisation work. That, roughly, was the scheme of the Society. The Council had agreed that 112 branches of the Society should be set up in England and Wales, and five branches in Scotland. All the five branches in Scotland had been definitely formed, and in England and Wales 109 of the 112 had already been formed. That was quite good work, considering that the best part of it had been done during the last winter session. There were about 160 delegates from the branches who were entitled to come, and the Society had actually received intimation from 122 of them that they were attending the conference meeting; there were 105 cards of delegates actually present at the meeting. That was a very happy augury indeed for the success of the scheme that so much interest should have been evinced at the first meeting. Discussing some of the possible functions and duties of the branches when once set up, the President said that the object of all organisation, of course, was protection, and the realisation of that object depended very largely upon how far the local people could be got to co-operate with headquarters. To his mind there were three essential factors in this scheme: First, there must be a real and intimate connection between the members of the branch in the local area; secondly, there should be, in his judgment, a real and intimate contact between the branches in a given area, federated together; and, thirdly, there should be a real and intimate connection between the branches and the federations and the headquarters of the Society in London. If that were done he felt sure that good series of meetings could be arranged in the local areas. There was every opportunity to provide scientific material for discussion. In the coming winter session the British Pharmaceutical Codex, which had just been issued by the Society, should provide at least one, and perhaps more, meetings of considerable pharmaceutical importance in discussing that work and making it generally known among pharmacists and medical men in the districts.

THE SOCIAL SIDE

Then the Society wanted the branches to develop especially the social functions. He was one of those who was a very great believer in the social side of the pharmaceutical organisation. Had it not been for the fact that social functions were being arranged, he was perfectly certain that they could not have got pharmacists together in their local areas to the extent that they had to-day. They might talk about scientific subjects so long as they liked, but they would not get the members to attend many meetings for long. They had to look facts in the face, and that was so. They might also talk about National Health Insurance matters, and they might get the members for a time, but they would again slacken off. They might talk of the remuneration to be obtained from patent medicines and dispensing; such a subject would certainly hold them for a time, but even that fell off after a bit, and his experience in all parts of the country had been that the social functions did not fall off, and that they could get the members to come together for this purpose when they could not get them for anything else. That

was why, in this branch scheme, they must see that the social functions were to the fore in the local work. Then, again, he considered that headquarters ought to be kept in touch with local pharmaceutical matters by means of something which the local branches themselves could do, and in this connection he suggested that the branches should be asked to send to headquarters periodical reports of the conditions of pharmacy in their local areas. That would be most useful to headquarters in working out their national arrangements. He also suggested that the branches should be the means of distributing the Society's official information to the local members of the Society, and that quarterly circulars should be sent out from the Society to all the branches. He believed that that system, which was adopted a few years ago in pharmacy, was a most excellent one. It kept pharmacists in touch with affairs at headquarters. It had fallen away, however, but good purpose would be served by renewing the system of sending out quarterly circulars. There were plenty of other functions. They could deal with the Parliamentary situation locally, and could help in dealing with Parliamentary pharmaceutical matters centrally. They could help in local elections, in interviewing on behalf of the Society candidates for Parliament, and they could help in ensuring that pharmacists were able to send at least one if not more representatives directly to Parliament. Pharmacists were suffering at the present time from the fact that they had not a direct representative of the Pharmaceutical Society in Parliament. It was something which would have to be remedied at the earliest possible moment, and the branches could help in that direction. The branches could also help very largely in the training of students in the local areas. Local educational schemes could be set up, scholarships could be arranged, and prizes given in the local areas for student-associates of the Society. They could also help in securing more members for the Society. Each branch secretary would be furnished with a current copy of the official Register, and would have a card index of the members of the Society in his area. By means of that he would know exactly who was inside his branch and who was outside, and it should be the object of the branch to see that as many of those who were outside should be brought inside. In that way not only would it strengthen its local organisation, but would help to strengthen the big national organisation as well. He believed that this scheme would provide an officer of the Society in every local area, who would be able to act as the medium through which all information from the Society could be distributed. He believed also that eventually the branches would be the sole local organisations of pharmacists. For the time being, of course, the branches would have to run side by side with the local organisations of existing associations. The Society did not wish to make any cast-iron rules as to the working of the branches. They wished them to work out their salvation in their own way. He believed that a tremendous amount could be done in connection with the educational work of the Society in the local areas, and he suggested—entirely, personally and without consulting the Education Committee—that grants should be made from the headquarters of the Society to local areas, such as science grants and scholarship grants, to help any local schemes which could be set in motion. He believed that if that were put into force they could help very largely indeed in improving the training facilities for pharmaceutical students, who in his judgment badly wanted dealing with at the present time.

FORMATION OF FEDERATIONS

The branch scheme would not be a perfect machine until they could get into force some scheme whereby the branches were federated in their divisions, something on the lines of the old Federation of Local Associations, and it would strengthen the scheme very considerably. So far as the headquarters of the Society were concerned, said the President, they were perfectly clear in their own minds that the new organisation scheme had got to succeed. Those at headquarters were prepared to do everything they could to ensure that such was the

case, and were asking the local areas in all parts of the country to help them in the realisation of their hopes. He had said that the object of organisation was protection. It was protection for the qualification of the pharmacist, and in this connection he asked his hearers to be perfectly sure that they brought home clearly to every one of the branches of the Society the great need for continuing all the support that could possibly be given to the Pharmaceutical Society of Great Britain. The Society was the only body that stood for its qualification; it was the body which had brought that qualification into existence, the body that protected it to-day, and it was the body that should protect it in the future. In his judgment, all progress in pharmacy had been absolutely and inseparably connected with the development of the Pharmaceutical Society during the last eighty years, and he was perfectly satisfied that any falling off in the support given to the Society—any falling off in membership, the moral support or financial support given—would have serious consequences for the practice of pharmacy in all parts of the country. There was only one thing which separated the pharmacist in practice to-day from the ordinary storekeeper, and that was the qualification. That was the great separating barrier between the ordinary general-store trading community and the pharmacists, and that was why he urged that, whatever else they did, they should see to it that the body that stood for the protection of the qualification received all the support that could possibly be given to it. Trade protection was absolutely right. It was badly needed in pharmacy to-day, and was being carried out on a large scale by another body. But what he wanted to impress upon the branch delegates was that, badly needed as trade protection was, even that would be no good to them if the qualification were watered down and the Pharmaceutical Society was allowed to fall away. That was why he urged upon them the necessity to maintain in every way they could the prestige and the paramount position of the Pharmaceutical Society. Let them, as delegates from the branches in all parts of the country, be determined on this one thing at any rate, that, as a result of this conference meeting, they would see that the Pharmaceutical Society was better organised and more solidly strengthened to resist any attack that might be made. Professional rights and established positions did not count for much nowadays really if political expediency happened to be pointing in another direction, and that was why he urged that if at any time it was necessary that the pharmacists of this country should fight for the qualification, and the rights that that qualification conferred upon them, they would see that the Pharmaceutical Society, in making that fight, was supported by every pharmacist in the country.

DISCUSSION

Mr. BENNETT (Hull) said that in his area, out of a possible seventy-six members, there were seventy-four actual. He was glad to hear the suggestion of grants for educational facilities, and explained the progress made in this connection in Hull.

Mr. PRING (West Kent) inquired if there were any restrictions regarding the manner in which the subsidy was to be spent.

Mr. LONGDIN (Scarborough) asked if it was proposed that there should be some remuneration for the local secretary's work.

Mr. MELLOR (North Staffs) agreed that the Society had lost ground through neglecting the students, and suggested that every student-associate should be eligible for membership of a branch without further payment.

Mr. NORWOOD, Ph.C. (Sheffield), suggested that the personal element could be introduced by every member of the branch being occasionally visited by a member of the executive. The federation meetings would tend to multiplicity.

Mr. PHILLIPS (Cardiganshire) thought that everyone who passed the Qualifying examination should be obliged to become a member of the Society.

Mr. MORTIMER (Harrogate) suggested that the branches should elect education committees, as these would be

welcomed by the local education committees to see that the work in the pharmacy classes was being done on the right lines. The committees could also, as is done in his area, place the advantages of pharmacy as a career before the students on leaving school.

Mr. KIRKBY, M.Sc., Ph.C. (Manchester), explained some of the work carried out by his branch and how much it had been appreciated, particularly by the younger members. He urged that the branches should have something to do on their own account to keep interest in them alive.

Mr. MARSH, Ph.C. (Leicester), referred to the protection of the qualification, and considered that the organisation should be strengthened in that direction. Periodical reports should be sent to the branches from headquarters. He criticised the federation proposals, and suggested that the branches should in future be informed regarding the arrangements of meetings, and that resolutions should be sent up by the branches for discussion.

Mr. HIRST (Liverpool) asked if it were possible for the Society to publish, in pamphlet form, particulars which secretaries could give to intending students regarding education and similar matters, also information relating to the laws and regulations concerning pharmacy.

Mr. McMILLAN (Glasgow and S.W. Scotland) said when the branch system was inaugurated in Scotland they had very little idea as to what they were expected to do, but in his area they set out to give attention to (1) education; (2) organisation, particularly in the more remote districts; (3) benevolence. In regard to the latter he thought the Society did not get credit for the good it does, and suggested that every member should subscribe a minimum of 10s. a year for this purpose.

Mr. SPARROW (Portsmouth) referred to the quarterly circulars, and considered that the information should not, as formerly, be for officials only, but available to all the members. The Society should trust the members and *vice versa*. Pharmacy *per se* does not pay.

Mr. MORELS (Croydon) said there is little inducement for qualified chemists who are assistants to become members of a branch until they are proprietors, and hoped that some means would be found to overcome this deficiency.

Mr. COATES (Burnley) pointed out that pharmacists are at present bound round with restrictions which, seeing that they hold a Government qualification as to competency, should not be the case. He advocated that anyone convicted of trafficking in dangerous drugs should be struck off the Register, and urged the Society to impress on the Government that the qualification is sufficient.

Mr. BEARDSLEY (E. Metropolitan) considered that, generally, the qualification was held much too lightly, and that powers should be sought to prevent any unqualified person from opening a drug-store or similar business. The Society should have power similar to that of the Medical Council.

Mr. LEAN, Ph.C. (Burton-on-Trent), thought it undesirable to institute federations which when tried a few years ago were not, in the majority of cases, a success. The present system gives a feeling of close contact with headquarters, while the federation also tends to weakness owing to the multiplicity of meetings, and it is preferable that matters should be referred direct to the branches. The branch system should at least be given a few years' trial. He considered that among the useful work which a branch could undertake was to investigate the manner in which the provisions of the Pharmacy Act were being carried out, particularly in regard to the poison-licences.

Mr. HIGGS (Thames Valley) emphasised the importance of the social side, adding that if a pharmacist did not take his wife to such an event occasionally she might well prevent his attending a more serious meeting. (Laughter.) He was confident that a good living could be made in the drug trade.

Mr. CARR (Nottingham) inquired as to what is expected in return for the half-crown.

Mr. HARBURN (Durham) thought that a student should be compelled to attend classes when these had been specially arranged.

Mr. HILL (Warrington) referred to Mr. J. Rymer Young, who he said was keenly interested in the pro-

ceedings. Mr. Hill asked if there was any limit to the period of student-associateship and for a clearer definition of "protecting the title."

Mr. STAINER, Ph.C. (Folkestone), wanted to know if the fee for, and voting power of, a student should be similar to those of a member.

Mr. WALSHAW (Huddersfield) welcomed the scheme, but if the Council desired co-operation it was up to them to take the initiative.

Mr. TURNER (Plymouth) urged that if the title chemist was assailed the Society should fight for all it was worth. He thought the institution of federation would be weakening.

Miss WINCH, Ph.C. (Sunderland), said her experience had been that students generally do not see any advantages in becoming associates, and she suggested that some inducement, such as a reduced examination fee, should be offered to them to become associates.

Mr. HAROLD WYATT, Ph.C., congratulated the President on his statement on the principles underlying the scheme. For seventy years Liverpool had been carrying on work similar to that outlined for the branches, and throughout the educational side has been particularly successful. While interest in most topics flags after a while, social functions are always popular, and he spoke of the advantages which may be derived through this medium. Chemists must pull together and individually must work to the best of their ability and do nothing to cheapen the qualification.

Mr. IRWIN, Ph.C. (Ealing), considered that the formation of local branches was the best move the Pharmaceutical Society has made.

Mr. SHEPHERD (Exeter) referred to the recent arrangement with the police, and inquired as to the position and action of the local branch in such cases.

The PRESIDENT said that they had had a most useful discussion, but he did not propose to take up the time of the meeting by answering them in detail at the moment. There was a shorthand note of the questions asked, and, with the permission of the meeting, he proposed that a full reply to all the questions should be drawn up, probably setting them out in sections, and an official copy of the whole thing sent to all the branches. Commenting further upon the excellent discussion, he said that if the branch-scheme of the Society had done nothing else than make it possible to bring into one room something like 150 representative pharmacists from all parts of Great Britain it was thoroughly justified. There were tremendous possibilities in this delegate meeting. If any crucial issue faced pharmacy in the future, and if they could get such a meeting as this out for serious business, he felt sure that almost anything could be done on behalf of pharmacy. He was very glad indeed that the Society had made the experiment, and felt certain that, with the help of the branches, everything that the Society hoped for would be realised, and that the scheme would reach fruition in a short time.

Mr. MARTIN (West Metropolitan) proposed a hearty vote of thanks to the President for his conduct of the meeting, which Mr. JENKIN seconded. The motion was carried unanimously, and, the PRESIDENT having returned thanks, the meeting closed.

Owing to the absence of the President of the Pharmaceutical Society, who had been summoned to Buckingham Palace to receive the honour recently bestowed on him, the chair at the meeting on Wednesday morning (July 25) was occupied by Mr. F. Pilkington Sargeant, Ph.C., who called upon Mr. E. Saville Peck, vice-chairman of the Educational Committee, to give his address on "Practical Training of Apprentices and Students." This paper and the discussion will be given next week.

CANADIAN ARSENIC.—The total production of arsenic in Canada in 1921 amounted to 2,982,000 lb., valued at \$269,300, against 4,918,000 lb., valued at \$447,848, in the previous year. Of the quantity produced in 1920 white arsenic accounted for 3,662,000 lb., the remainder of the chemical being obtained from arsenical concentrates.

Personalities

MR. H. B. HAMMOND, the new President of the Sheffield Pharmaceutical and Chemical Society, was born at Sunderland, the son of the late Captain H. Hammond, of that port, he was apprenticed to Mr. F. V. Butterfield, of Hatherly, in 1902, and first came to Sheffield in 1908. He studied at the Royal Dispensary School Pharmacy, Edinburgh, and qualified in April, 1909. He returned to Mr. G. Squire, 14, Haymarket, Sheffield, for whom he is now manager. He has been a member of the local association all the time he has been in Sheffield, and has delivered a number of papers on various subjects. He designed and executed the roll of honour in 1919, and for three years he has been secretary to the local Society and a Vice-President.



MR. H. B. HAMMOND.

MR. FREDERIC WILLIAM GAMBLE, Ph.C., F.C.S., this year's chairman of the British Pharmaceutical Conference, is a native of Norfolk, and was born near King's Lynn in 1872. He came to London in January 1887 as an apprentice to Mr. Herbert Dixon, 1 Russell Gardens, Kensington, W., and after his four years' apprenticeship as assistant with J. G. Shirley & Son, Westbourne Grove, until he qualified. Mr. Gamble studied under the late Dr. John Muter for the Minor and Major examinations, setting up a record as a prize-winner and becoming a pharmaceutical chemist in 1894, in which year he won the Pharmaceutical Society's bronze medal in the Pereira competition. Mr. Gamble joined Allen & Hanburys, Ltd., at Plough Court, in January, 1895; after a year in the City he was transferred to their West End pharmacy, and became manager of that branch in January 1900. In the years 1895-1900 Mr. Gamble was a prominent member of the Chemists' Assistants' Association, being secretary and subsequently President for two years. He was also an active member of the Western Pharmacists' Association. Mr. Gamble was appointed a director of Allen & Hanburys, Ltd., in 1913, retaining the management of the West End branch until the death of Mr. W. Ralph Dodd in December 1917, since which time he has been concerned with the general activities of the company. Mr. Gamble was an energetic member of the original Committee engaged in the compilation of the British Pharmaceutical Codex, which absorbed all his leisure for the four years preceding the publication of the first edition. He was also a member of the Codex Revision Committee which produced the 1911 edition, and has acted in a similar capacity in respect of the third edition. Mr. Gamble has been associated with the British Pharmaceutical Conference for many years, and became a member of the Executive in 1910. In his early days he made himself the pharmaceutical authority on gums and vaccines, and frequently lectured and wrote on these subjects and upon bio-chemical matters. Of recent years absorption in general business is, perhaps, responsible for a reduced output from the scientific point of view. Mr. Gamble is a Fellow of the English and American Chemical Societies and of the Society of Chemical Industry. He has contributed papers to the evening meetings of the Pharmaceutical Society—e.g., with Mr. R. R. Bennett on "Osmotic Pressure and its Physiological Bearing," and with Mr. Norman Evers on "Modern Ideas Respecting Acidity and Alkalinity." He has served on the Pharmaceutical Society's board of examiners for fourteen years.

Marriages

TAYLOR—THOMSON.—At the Parish Church, Hoylake, on July 16, by the vicar, the Rev. W. T. Warburton, M.A., Walter S. Taylor, chemist and druggist, Nantwich, to Sophie Thomson, Hoylake.

ANDERSON—HILL.—At Holy Trinity Church, Millom, on July 11, Dr. W. B. Anderson, Oldham, son of the late Mr. A. B. Anderson, chemist and druggist, Dundee, to Mabel, youngest daughter of the late Mr. G. Hill, J.P., Millom.

BUCKLEY—STANLEY.—At St. Stephen's Church, West Bowling, Bradford, on July 21, by the Rev. C. Wemys, Frank Buckley, chemist and druggist (W. C. and H. Hebden, Halifax), to Doris Edwena, younger daughter of Mr. J. Stanley (Brook, Parker & Co., Ltd., Bradford).

EVANS—BECHERVAISE.—At St. John's Church, Leytonstone, on July 18, by the Rev. Canon Brown, Harry Bertram Evans, M.P.S., to Gladys Kate, youngest daughter of the late Mr. R. R. Bechervaise, Leytonstone.

Silver Wedding

(From THE CHEMIST & DRUGGIST, July 30, 1898.)

PERKINS—PARNELL.—On July 26, at St. Mark's Church, Wolverhampton, by the Rev. R. G. Hunt, M.A., vicar, Thomas Richard Perkins, chemist, Henley-in-Arden, to Lily Elizabeth, daughter of the late James Parnell, chemist, Wolverhampton.

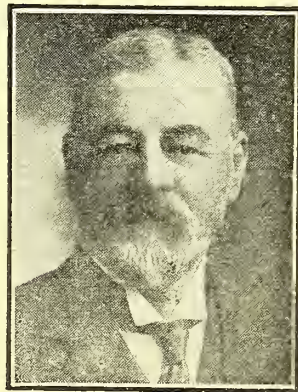
Deaths

ADAMS.—At Helenlea, Monifieth, on July 17, Annie Fenton Scott, widow of the late Mr. David Adams (Johnston & Adams, wholesale and retail chemists, Murraygate, Dundee).

DAVIES.—At Rochester, on July 17, Mr. Arthur Maurice Davies, father of Mr. M. C. V. Davies, chemist and druggist, 114 Delce Road, aged sixty-two. Mr. Davies, who was a native of Shropshire, went to Rochester fourteen years ago and took the business which has now passed to his son. He is also survived by a widow and a daughter. Mr. Davies was widely respected, and there was a large gathering at the funeral service, the first part of which was held at St. Peter's Church.

HOLLIER.—At Copthorne Villa, Granville Street, Shrewsbury, on July 11, Mr. Edward Robinson Hollier, chemist and druggist, aged eighty years of age. Mr. Hollier was in business before the passing of the Pharmacy Act, 1868, in Mardol, Shrewsbury, but retired nearly forty years ago. He leaves a widow and one son.

PENKETH.—At Central Hospital, Liscard (Wallasey), on July 18, Mr. John Penketh, 27 Kingsway, Wallasey, aged eighty-one. He was born at St. Helens and apprenticed to Pyne & Co., Manchester, afterwards starting on his own account in St. Helens, being in business on the passing of the Pharmacy Act, 1868. Afterwards he joined R. Sumner & Co., Ltd., Liverpool, as town traveller, with whom he had been for thirty years, latterly as a director. Death took place from cerebral hæmorrhage, after being unconscious for eleven days. He was a great favourite with the chemists, upon whom he had called for so many years. The funeral took place on July 23 at Rake Lane Cemetery, Wallasey.



MR. J. PENKETH.

Trade Notes

EUCRYL TOOTH POWDER.—The retail price of tins of Eucryl tooth powder is now 1s. each.

ECMO TOILET PREPARATIONS are made by the "E.C.M.O." Co., 27a Mere Street, Diss.

ENGLISH-MADE AMBER BOTTLES for the wholesale trade are a speciality of A. Oppenheimer, 14 Queen Victoria Street, London, E.C.4.

"**FALLOWFIELD'S PHOTOGRAPHIC ANNUAL**" for 1923 is the title of the catalogue issued by Jonathan Fallowfield, Ltd., 146 Charing Cross Road, London, W.C.2.

ZEALS ASTHMA FLUID.—The outfit sold by Zeals Asthma Fluid and Atomizer Co., Ltd., Severn Road, Weston-super-Mare, is figured in the company's advertisement.

MELBA TOILET PREPARATIONS.—A. Connell & Co., 20 Bevis Marks, London, E.C.3, who give specimens of the current advertising of the Melba toilet preparations, invite chemists to write for trade terms.

HAROLD WITTRICK & Co., 36 Camomile Street, Bishopsgate, London, E.C.3, have been appointed sole agents for Great Britain and Ireland for the Dag Drugs Co., Ltd., Basle, Switzerland, exporters of crude drugs and herbs.

WINDOW-DRESSING PAPERS.—J. C. King, Ltd., 42-60 Goswell Road, London, E.C.1, have a large variety of ornamental papers in stock for use in shop window-dressing. Samples will be sent on receipt of postcard request.

THE SWANDOWN BONUS OFFER which has been advertised in recent issues closes on July 31. Those who have not taken advantage of the offer should communicate with Henry C. Quelch & Co., 4 and 5 Ludgate Square, Ludgate Hill, London, E.C.4.

SORBO SPONGES.—The Sorbo Rubber-Sponge Products, Ltd., 24 Walbrook, London, E.C.4, ask us to state that a report in the Press that their factory had been destroyed by fire is incorrect. Their factories are situated at Woking and are in perfect working order.

FRENCH PROPRIETARIES.—A series of warnings to the trade which appear in the advertisements of this issue refers to Cachets Faivre, Pastilles Valda and Dragées Gelineau. The companies who own these preparations are giving the trade the opportunity of returning supplies not obtained from them. Particulars are given in the advertisements.

YLANG-YLANG OIL FROM COMOROS.—Antoine Chiris & Co., Ltd., 3 Drapers Gardens, London, E.C., have lately received consignments of Ylang-ylang oil from the Comoros Islands, where they have been distilling this oil for some time. Recently they have extended their operations with a view to larger output. The oil, which is clear and has a fragrant odour, is offered at very reasonable rates.

HOWARDS OF ILFORD.—The final removal by Howards & Sons, Ltd., of the last plant remaining at their old Stratford works to the new factory at Ilford took place this week, and is an event of some interest in the history of the British chemical trade. It was in 1805 that William Allen and Luke Howard moved their small plant from Plaistow and built a factory at Stratford, which was largely increased in 1814 by the taking over of the then century-old "City Mills." From that time forward plant and buildings were steadily added and more land leased or purchased to cope with the expansion of the firm's activities, till in 1898 it was decided that the extortionate rates in West Ham, its smoke-laden atmosphere, and the difficulty of finding land for more buildings necessitated the establishment of entirely new works in a fresh district. The choice of the Ilford site has proved a wise one, and without undue hurry the present magnificent modern factory has been growing during the last twenty-five years and will soon cover the 33 acres belonging to the company, fresh buildings being constantly added. "Howards of Stratford" has for nearly a century and a quarter been a very familiar expression all over the world, but henceforward "Howards of Ilford" must take its place.

Westminster Wisdom

By the "C. and D." Parliamentary Representative

BROADCASTING LICENCES

The Postmaster-General stated in the House of Commons, on July 24, that he had issued 52,264 wireless experimental receiving licences, 111,905 broadcast licences and 843 transmitting licences.

THERAPEUTIC SUBSTANCES BILL

A Bill has been introduced into the House of Lords to provide for the regulation of the manufacture, sale and importation of vaccines, serums and other therapeutic substances. The schedule to which the Bill applies enumerates vaccines, serums, toxins, antitoxins, antigens, salvarsan, and analogous substances used for the specific treatment of infective disease, insulin, and preparations of the posterior lobe of the pituitary body intended for use by injection. The Bill was read a second time in the House of Lords on July 25.

MEDICAL AID SOCIETIES

Mr. Clarry asked the Minister of Health on July 11 if he can see his way clear to framing regulations whereby a friendly society or group of societies may form medical aid departments for the purpose of supplying medicines and surgical appliances to their members?

Mr. Chamberlain replied that the object which the hon. member has in view cannot be secured without amending legislation, which would be of a controversial character, and which he did not see his way to introduce. He had no power to deal with the matter by way of Regulations.

PHARMACY TRAINING IN YORKSHIRE

Mr. Leach asked the President of the Board of Education, on July 19, if he is aware that since the introduction of the Pharmaceutical Society's new regulations, 1920, no technical college under his Board will be recognised for any course in pharmacy, and that at least two publicly maintained institutions in Yorkshire, which have for many years provided very efficient courses, are not now upon the list of institutions recognised by the Society; if he is aware that the only institution for the training of pharmacy in Yorkshire is a private school in Leeds, the principal of which is the Vice-President of the Pharmaceutical Society itself; and if, in view of the fact that public money has already been spent on the provision of facilities for the training of pharmacy students in institutions such as the technical college, Bradford, he will take steps to ensure that such publicly supported facilities are used to the full.

Mr. Wood replied that the statement in the first part of the question is not quite accurate. Many technical colleges, including the two Yorkshire colleges referred to, have been approved by the Pharmaceutical Society for the purposes of Part I. of their Qualifying examination; and eight of the institutions in England and Wales which are approved for the purposes of Part II. are technical colleges. He is aware that two colleges in Yorkshire, which have provided instruction in the subjects taken in Part II., are not approved for the purposes of that Part under the new regulations of the Society; and he had no reason to question the hon. member's statement concerning the one institution in Yorkshire which the Society has approved for that purpose. With regard to the last part of the question, he had no authority to interfere with the discretion of the Society in the choice of the institutions in which they will approve courses in preparation for membership of their own body.

Information Department

INFORMATION WANTED

Postal or telephone information with respect to makers or first-hand suppliers of the undermentioned articles will be appreciated:

S/207, Canon Chapman's cure for alcoholism	M/257, "Mater" towel	sanitary
B/247, Evatmine	D/257, "Phonozone"	Globin
B/247, Kassamol	E/207, "Sulpho tablets"	
B/237, Licoi		

Observations and Reflections

By Xrayser II.

Mr. Alban Atkin

is quite right in deprecating the refusal to handle "dangerous drug" prescriptions. To do so is, in my judgment, suicidal, though, as I have already said, one can understand the feeling of irritation and disgust which has led a good many men into the error. In individual cases it may not be worth while to run the risk involved, but we must look beyond the individual case. If, as a body, we refuse these prescriptions we shall forfeit our right to public confidence, and play into the hands of those (if there really are such) who are bent on undermining our position as legalised dispensers of medicine. In every case of refusal it should be made plain that we refuse not on general grounds, but because there is special ground of uncertainty as to the genuineness of the prescription. There is, of course, the difficulty of doing this without offence; but that must be faced, and it is not likely that it will very often arise. It will sometimes happen that a genuine prescription may look doubtful, but it is better to risk offending a stranger than to abdicate our position as men not only of professional skill, but of trained judgment in the discharge of difficult duties, but the outstanding fact in connection with these difficulties is

The Duty of the Pharmaceutical Society

itself to take action in our defence. This is not a question of our business interests; it is not one that can be relegated to any union, whether it be a trade union or not; our very existence as a statutory body with legally recognised rights is involved in it. The recent prosecutions at Barry, if they are made precedents to be generally followed, will render the full discharge of our obligations under the statute impossible. Suicidal as such abstinence may be, it is not to be expected that we should continue indefinitely to run such risks entirely on our own responsibility, nor is it reasonable that we should have to insure ourselves against them. That is a business transaction, but, I repeat, our responsibility is not a business matter: we are responsible as members of a profession, and the society that exists for the upholding of that profession is the body to which we should look for protection. Yet the council sits with folded hands, and lets these prosecutions go on without a word of protest or a gesture of help. So far as this matter is concerned, it, apparently, has abdicated its function whether we do or not.

Too Much

may easily be made of the fact that co-operative societies ostensibly adopting the price list of the Proprietary Articles Trade Association allow their members a dividend on all purchases. It would, no doubt, be well if they could be persuaded to exempt purchases of proprietaries; but considering the smallness of the dividend, and the small proportion of proprietary articles to the total amount of goods purchased, the matter is not worth quarrelling about. It is much better policy to leave things as they are than to revert to the old state of things. It is distinctly an improvement that these societies, or any of them, subscribe to the P.A.T.A. regulations to the extent to which they now do; it is a matter in which we should be content to go slowly. The same is true with regard to cutting, whether among ourselves or the grocers. If the P.A.T.A. principle is sound, we may safely leave it to time; the leaven may work slowly, but the annual report shows that it is working.

Like Your Correspondent "Cymro,"

however, I should not welcome the admission of grocers to our P.A.T.A., at least, not on equal voting terms, and they would not be likely to come in on any other. As I have said before, they would completely swamp us, and as they can afford to sell proprietaries at less profit than we can the result might well be disastrous. It is true that a similar association of their own might have much the same effect, but

I would not do anything to help them in forming one, or admit them to the advantages of one already formed. Let us at least be masters in our own house. By sharing it with them we should be inviting them to a wider area of competition than they have yet (generally speaking) occupied, as well as endangering our unique position in public estimation. They would probably go much more largely than they have hitherto done into the patent-medicine trade, and my experience is that the cultivation of that branch leads on to trading in packed and even in loose drugs. Then would follow the setting up of a drug and dispensing department under a qualified manager. The P.A.T.A. would have its ranks increased, but we should ultimately find ourselves in the position of the monarch who called in a neighbour to help him against his enemies, only to be conquered himself by his helpers.

Examination Prescriptions,

if all I hear is true, are frequently of a kind that one never meets with in practice, and that under the conditions of actual business could not be dispensed in such a way as at once to satisfy the prescriber's requirements and remunerate the dispenser. Several have been shown to me lately which were manifestly mere puzzles, such as I, for one, have never known any doctor write. In some cases it has been ordered that such articles as pil. hydrarg. and pil. rhei co. should be extemporaneously prepared. The quantities in which ingredients are prescribed, and the total quantity of the mixture, are designedly as awkward as possible; every possible difficulty in calculation is introduced, every conceivable trap set to catch the unwary and generally nervous candidate. Now I do not say that the prescriptions submitted for dispensing should all be perfectly plain and easy, but I do contend that something like an average amount of difficulty is all that is needed, and, indeed, all that is fair.

The Pharmacy Club

is dead: it died of neglect, especially the neglect of official pharmacy; indeed, something more positive than neglect might be charged against those at headquarters, a real if latent hostility. The first promoters of the club were perhaps to blame for the feeling which undoubtedly got abroad that the club was a troubler of Israel, or was designed to be. The title "Progressive," considering the significance it had in other quarters, was unfortunate, and the whole conduct of the club was at first a challenge to the powers that be. All this, however, was but the exuberance of youth; had there been wiser heads on the Council this enthusiasm for the "uplift" of pharmacy would have been made good use of, and the club moulded into such an instrument of social union as we all profess to feel the need of.

The Medicinal Virtues

of the strawberry are a good deal exaggerated in some of our newspapers, and it is hardly correct to say that our "forefathers ascribed to it a high place among Nature's medicines." Culpeper, indeed, praises it with his usual extravagance, but even he cautions his readers against its excessive and indiscriminate use. Both the leaves and the fruit were in our early pharmacopœias; they did not, however, retain their place very long, and it was the leaves that were most used as a medicine. Quincy has no mention of either. The leaves were used externally as a cooling and astringent application, and their depurated juice was taken in doses of two or three ounces with the same intention. Their use was thought to be specially indicated in what was called "pin and web"; the juice of the fruit was also used for the same purpose, but this is mainly folk-medicine. Culpeper recommends a distilled water of the fruit for inflamed eyes. The stalks, but no other part of the plant, entered into the composition of the once-famous Antioch drink, a vulnerary for which there are various recipes. In some of these it is ordered that the drink be prepared between the feasts of St. Philip and St. James and the Nativity of St. John the Baptist.

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Editorial Articles

The Conference Diamond Jubilee

THE British Pharmaceutical Conference which is being held this week in London is the sixtieth in the history of the Conference. At the time of the Jubilee meeting in 1913, which was also held in London, we gave in a series of articles a survey of the work of the Conference during the fifty years of its existence. The next ten years include the period covered by the war, when the Conference was marking time. The meeting in 1914, with Mr. E. H. Farr as President, was at Chester, and had scarcely concluded when war broke out. The next four Conferences held in London were of a formal nature, the Presidents being Mr. E. S. Peck, Dr. David Hooper, and Mr. C. A. Hill. The first post-war Conference

(1919) was also held in London, with Mr. W. Kirkby as President, and was the beginning of the revival of the meetings which reached fruition at Liverpool in 1920, and maintained the standard in 1921 at Scarborough and 1922 at Nottingham. It was at Nottingham, under the presidency of Dr. H. G. Greenish, that the change was made in the constitution of the Conference, which thereafter became part of the organisation of the Pharmaceutical Society of Great Britain. The President of the Society is President of the Conference, the work usually filled by the President of the Conference being assigned to a chairman. Mr. F. W. Gamble is thus the first chairman of the British Pharmaceutical Conference. In his address, given in full elsewhere in this issue, he appropriately reviews the origin and history of the Conference during the sixty years of its existence. The second part of the chairman's address deals with organo-therapy, a development of medicine that has taken place since the foundation of the Conference. It is true that in the sixteenth and seventeenth centuries a crude form of animal therapy was practised, but the modern kind differs mainly in the refinement of the pharmaceutical methods of preparation. Mr. Gamble begins this part of his review with a summary of the modern views on cod-liver oil and finishes with an account of the most recent views on insulin. The feature of the meeting this year is a series of papers on international standards for drugs, these being arranged for Wednesday, so that the members attending the International Congress of Pharmacy might take part in the discussion. The papers in the science section, inclusive of those of the international type referred to, numbered twenty. The series dealing with international questions consisted of the following papers:—*A Plea for International Uniformity in pharmaceutical preparations* is made by Mr. Victor Cofman, who urges that "pharmacists, medical men, and chemists" must agree concerning formulas and methods of analysis, and that these methods and formulas, once worked out, should be officially recognised in all countries.

Mr. A. J. Jones, in his paper on the *International Standardisation of Belladonna and its Preparations*, illustrates the importance, from a physiological point of view, of taking the solanaceous plants as entities and not as mere vehicles for the administration of atropine or hyoscyamine. Much careful investigation has been made in the section dealing with galenicals. Among Mr. Jones' suggestions are, an official soft extract, a controlled preparation for the old green extract, and a slight modification for the B.P. assay process. A defence is made of the older volumetric indicators. In any international formulas for preparations permissible deviations, says Mr. Jones, must be made.

In his paper on the *International Standardisation of Cinchona and its Preparations*, Mr. Bennett puts forward critical arguments in favour of an international method of assay and of standard formulas for the various preparations. The author's suggestions include standardisation of the bark by titration, a limit fixed for galenical preparations of 6 to 8 per cent., and a compound tincture containing simple tincture of cinchona instead of bark, thus avoiding the necessity of separate standardisation. In an historical note on *The International Standardisation of Colchicum Preparations*, Misses E. S. Hooper and K. M. King give a tabulated account of changes in tincture of colchicum in this country and the United States during the past hundred years, followed by a table showing the preparations made from the seeds or the corm in twenty-two current Pharmacopœias.

Mr. H. B. Stevens, in his paper on *The International Standardisation of Opium and its Preparations*, draws attention to the progress that has been made in obtaining uniformity in the morphine content throughout the various pharmacopœias, indicating at the same time what has yet to be done. He suggests also that a careful examination be carried out of the various methods of assay so that the best process may be universally adopted. Brief summaries of the other papers are as follows:—In *A Further Examination of Artemisia Brevifolia*, Professor Greenish and Mr. Cyril W. Maplethorpe resume the investigation of a subject previously explored by the Professor and Miss C. E. Pearson. The yield of santonin is now found to be only about half of that obtained in the previous series of experiments—a state of things possibly due to the material having been collected at a different stage in the development of the plant, or to variation in climatic conditions. The leaves are the only part of the plant yielding percentages of santonin of practical importance.

In the paper entitled *Bismuth Tetroxide prepared from Sodium Bismuthate*, C. E. Corfield and Elsie Woodward report on an interesting research suggested to them by the finding of a bottle in the chemical laboratory of the Pharmaceutical Society labelled "bismuth pentoxide." This, they are able to show, is not the pentoxide, and they also conclude that such an oxide does not exist owing to the ease with which oxygen is given off. The authors have, however, been able to prepare a tetroxide in a hydrated form and suggest a formula for it. Here again, however, the oxide is unstable, as oxygen is evolved when any attempt is made to remove the water.

In their paper on *Bismuth and Sodium Bismuth Tartrates*, C. E. Corfield and F. W. Adams indicate that bismuth tartrate prepared by precipitation consists of mixtures of the two theoretically possible oxytartrates Bi_2O ($\text{C}_2\text{H}_3\text{O}_4$)₂ and Bi_2O_2 ($\text{C}_2\text{H}_3\text{O}_4$)₂. On the other hand bismuth tartrate prepared by a modification of the official method for liq. bismuth. and ammon. cit. is shown to be an acid tartrate. As different methods of administration are followed in regard to "acid" and "neutral" bismuth preparations, and as the indications are also different, the authors recommend that a distinction be made between them. The methods of obtaining uniform preparations are indicated.

Messrs. Bernard F. Howard and Oliver Chick, in *The Composition of Cinchona Febrifuge Mixtures*, examine critically some recent statements on the treatment of malaria, and suggest that the administration of seven (and probably more) alkaloids, each having a distinct therapeutic effect, is a retrograde step: unstandardised mixtures of unknown toxicity should not, the authors contend, replace pure alkaloidal products.

Owing to the fact that colchicine is not a typical alkaloid, the usual assay processes by means of immiscible solvents are not very satisfactory, but in his paper on *An Investigation of Colchicum and its Galenicals* Mr. James Grier indicates a process which has been found suitable. He gives the results of his investigations and emphasises also the preservative action on the alkaloid of the colloidal extractive matter present in the tincture and wine. Colchicine in aqueous solutions, he points out, deteriorates gradually, but even in a weak alcoholic solution like colchicum wine the active ingredient retains its strength fairly well. The extracts, which are shown to be fairly stable, are also dealt with, and Mr. Grier concludes that in pharmaceutical preparations containing colchicum, if the colchicine is

desired to be kept unchanged both acids and alkalis should be avoided.

The Activity of Pharmacopœial Preparations of Ergot is the subject of a report by A. J. Clark and W. A. Broom, who condemn the methods of preparation outlined in the B.P., pointing out that, if the instructions are closely followed, the products are almost completely devoid of alkaloids, although from the same sample of drug the U.S.P. method extracts considerable quantities of alkaloids. The action of ergot preparations in reversing the effect of adrenalin upon the isolated rabbit's uterus, however, can be made the basis of a satisfactory method of standardisation.

An examination of the bark of Erythrophloeum Guineense has been undertaken by Cyril W. Maplethorpe, who first describes the work and findings of previous investigators and afterwards details his own experiments. A quantity of 25 gm. of the powdered bark was exhausted by means of a series of solvents, a yield of 19.99 per cent. of extractive matter being obtained. The extraction of the alkaloid was the next stage, and the various processes followed are described. Results show that the alkaloid occurs in the bark in the proportion of about 0.1 per cent. No crystalline salts could be prepared. The purest form of the alkaloid appears as a pale-yellow varnish.

As a result of *Observations on the Reduction and Oxidising Properties of Milk*, Paul Haas and T. G. Hill conclude that milk contains two substances which in the presence of acetic aldehyde can exert both reducing and oxidising properties. Neither substance is enzymic, as both appear to be used up as the result of their activity. The tests were carried out with sodium nitrate and sodium nitrite respectively.

J. Cofman-Nicoresti and Snow B. Tallantyre gave a paper on *Pharmaceutical Preparations of Quillaia Bark* which, they point out, is an addition to the series of monographs, by them, on pharmaceutical preparations. After investigating various barks they conclude that there is no reason why one variety should be preferred to another. The method of extraction with water and subsequent addition of alcohol is favoured. They also suggest that the proportion of bark in the official B.P. tincture should be increased to 20 per cent., the quantity used in other pharmacopœias, and a minimum of 1.8 per cent. of saponin might be fixed.

In a paper on *The Formation of Quinotoxin in Sterilisation of Acid Quinine Solutions*, Bernard F. Howard and Oliver Chick describe the results of their investigation into the decomposition of quinine including, in the examination, acid solutions of quinidine, cinchonine and cinchonidine. The report indicates that solutions of the bisulphate of the cinchone alkaloids are unsuitable for packing into ampoules for hypodermic use, and that bihydrochlorides only should be employed. The bisulphate, under the influence of heat, is rapidly changed to quinicine or cinchoninicine, while the alteration in the bihydrochloride is negligible.

In a short note on the *Chemical and Physical Characters of certain mucilaginous Extracts of Seaweeds*, Paul Haas and Barbara Russell Wells report the results of experiments on Irish moss. It had previously been shown that carragan contains two complex organic salts of calcium, and the authors have been able to determine that the highly viscous aqueous solutions of these substances belong to the group of colloidal electrolytes, and as such, conduct electricity and exert a measurable osmotic pressure.

J. H. Franklin and J. Greenhalgh gave a paper entitled *Notes on Tinctura Cardamomi Composita B.P.*, in which they suggest a formula which will give a product identical in character with the present B.P. tincture, but is free from deposit even when kept in ice water at 32 deg. F. for two months. The alcoholic strength of the preparation is practically 45 per cent.

The source and characters of *Manchurian Liquorice Root* were described in a paper by Ibrahim Ragab Fahmy, the differences between this variety and the Spanish root being shown by microscopic sections.

A paper on *Lithium, Sodium, Potassium and Ammonium Hippurates* was contributed by C. E. Corfield and B. W. Melhuish. Methods of preparation are given; the lithium salt is the most easily prepared in a crystalline form.

Professor H. G. Greenish and C. E. Corfield gave a note on *East African Cinchona Barks*. Assays are given of three samples with total alkaloids of from 10.2 to 11.83 per cent.

The Practice section of the Conference has been transformed into a meeting of delegates from the branches of the Pharmaceutical Society, the subjects discussed on Tuesday afternoon and Wednesday morning being the functions and possibilities of the branches of the Society and the training for apprenticeship. There is no doubt that the first conference under the auspices of the Pharmaceutical Society was a success. The social programme was an exceedingly attractive one, and apart from the more serious side was sufficient to induce a large number of chemists to visit London in the holiday season.

New Companies and Company News

P.C. means Private Company and R.O. Registered Office

HOLLOWAYS, LTD. (P.C.).—Capital £500. Objects: To carry on the business of chemists, druggists, drysalers, oil and colourmen, etc. The first directors are: A. W. Holloway and A. R. Round. R.O.: 12 Wolverhampton Street, Dudley.

VEITCH (CHEMIST), LTD. (P.C.).—Capital £1,300. Objects: To acquire the business of a chemist and druggist now carried on at Burnley as "William Veitch." The first directors are: Edith M. Fennell, Mary E. Fennell, Ruth M. Fennell, Francis D. Fennell and Asa L. Drake. R.O.: 420 Colne Road, Burnley.

INTERNATIONAL COMMODITIES, LTD. (P.C.).—Capital £500. Objects: To carry on the business of importers and exporters of perfumery and toilet commodities, fine toilet-soap makers, and essential-oil merchants, etc. Director: J. D. Milne, Kensington Palace Hotel, De Vere Gardens, Kensington, W., merchant. R.O.: 229-230 Bank Chambers, 329 High Holborn, London, W.C.1.

LAVOCLEAN, LTD. (P.C.).—Capital £10,000. Objects: To acquire the business carried on at Grays, Essex, or elsewhere, as "Lavoclean" for the manufacture or sale of Lavoclean, including the rights for the process or formula for manufacturing a chemical compound under the said name, and trade-mark therefor, and to adopt an agreement between T. Cleathero and Charles Wall, Ltd. The first directors are: F. Wall, T. Cleathero and H. Wall.

BARONS, LTD. (P.C.).—Capital £1,000. Objects: To carry on the business of consulting, analytical, manufacturing, pharmaceutical and general chemists, drug merchants and dealers, druggists' sundriesmen and drysalers, herbalists and medical seedsmen, opticians, manufacturers of and dealers in foods, essences, invalids' and table delicacies, toilet and other soaps, etc. The first directors are: A. Craven, J. H. Craven and T. H. Craven. R.O.: Derby Street, Cheetham, Manchester.

BRITISH PHARMACEUTICAL CONFERENCE

17, Bloomsbury Sq.

Hotel Great Central

THE handsome Wharncliffe Room of the Hotel Great Central proved amply large enough to accommodate the audience that gathered for the opening of the Conference. Comfortable chairs were arranged in semi-circular order

before a platform placed under a window, and shortly after ten o'clock the audience seated themselves, greeting with cordial applause the arrival of the Marquis of Salisbury, Lord President of the Privy Council. Mr. F. W. Gamble, chairman of the Conference, presided: on his right were Lord Salisbury, Professor Van Itallie, Professor Greenish, and Mr. R. R. Bennett (secretary of the Conference); on his left, Mr. E. T. Neathercoat (President of the Pharmaceutical Society), Mr. E. White, Mr. D. Lloyd Howard (treasurer), and Mr. C. H. Hampshire (secretary).

After announcing that there would be no smoking till the ladies had left, the Chairman called upon the Lord President of the Privy Council. Lord Salisbury at once put himself *en rapport* with his audience by his gift of expressing with distinction ideas that must have been more or less present in the minds of most

of the assembly. His lordship touched felicitously on the revival of international co-operation and on the relations between pharmacy and pure science—and, unlike some members of past Governments, he had no difficulty with the pronunciation of "pharmaceutical." The inevitable flashlight photograph followed the Lord President's brief address, and he was overheard remarking to the chairman, "That is one of the things you chemists have discovered." Mr. Neathercoat proposed a vote of thanks to the Marquis of Salisbury; the applause with which it was accorded was unusually hearty and expressive. After his lordship's acknowledgment, the chairman gathered up the "galley" of his address and read it in his usual clear tones. It is worthy of record, perhaps,

that his quotation about "the old lady of Bloomsbury Square" was received without the faintest of smiles, so far as we could see. The address was followed with close attention, and was vigorously applauded at its close. The

Lord President of the Privy Council at this point left for another engagement, the audience standing spontaneously. Precedent was broken in the choice of Professor Greenish, the junior of past Presidents in the room, to move the vote of thanks to the chairman: it was presumably a case of "The Conference is dead—long live the Conference!" Mr. Gamble, in reply, humorously professed to be appalled at the task confronting a chairman of the Conference sixty years hence. By this time it 11.30, and the ladies filed out (with a few exceptions) in search of diversion while Mr. Bennett was reading the annual report. The treasurer's report followed, Mr. D. Lloyd Howard suggesting that in future his statement would probably be in the nature of a petty cash account. Two science papers were taken before luncheon, the first being read by Miss Elsie Woodward, A.I.C., Ph.C.; and in the afternoon eight

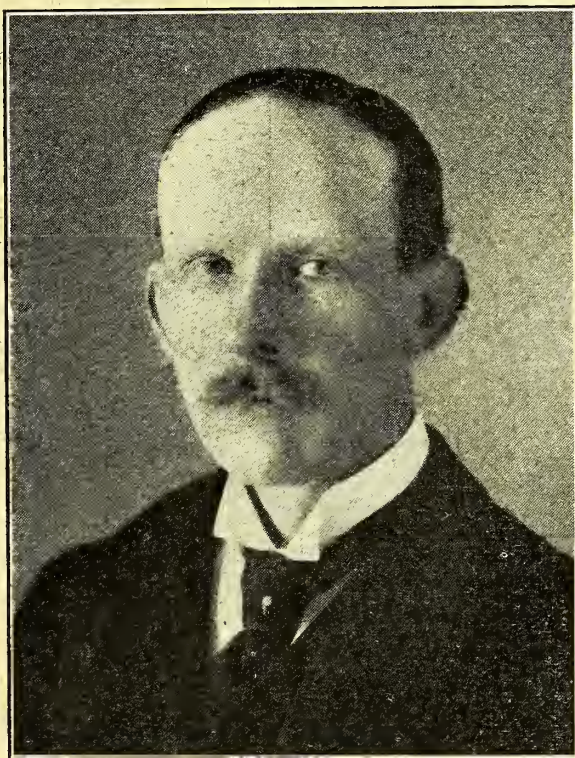


Photo.]

[Elliott & Fry.

THE MARQUIS OF SALISBURY, Lord President of the Privy Council, who welcomed the Conference to London.

more were disposed of, leaving ten for consideration on the following day. Some members wished, no doubt, that they could be in two places at once, the science section and the conference of delegates each having strong claims on the allegiance of the faithful, but with so full a programme overlapping was inevitable—overlapping of times, of course, not of subjects. Interest in both sections was well sustained, and although one missed the regular attendance and contribution to discussion of a few of the oldest members of the Conference, it was a pleasure to see authorities such as Mr. E. H. Farr and Mr. Robert Wright eager for the fray. Mr. Gamble's handling of every situation in his capacity of chairman was beyond praise.

At the commencement of the proceedings the chairman (Mr. F. W. Gamble, Ph.C., F.C.S.) drew attention to the visitors' book. He then called upon the Lord President of the Privy Council to address the Conference.

The LORD PRESIDENT OF THE COUNCIL (the Most Hon. the Marquis of Salisbury, K.G., G.C.V.O.), who was received with applause, said: I feel it a very great honour that I have been asked to address you at the beginning of this important occasion. It is, I believe, a privilege accorded to me because of the office which I have the honour to hold. Some of you might, on the face of things, ask what is the connection between the President of his Majesty's Privy Council with the great remedial and scientific work in which you are engaged. It is a fact, however, that by that process of growth which distinguishes British methods gradually round the office of the Privy Council has grown up all the official connections which exist between the Government and all branches of educational research, no matter which department of knowledge or science, that might exist in the country. Consequently, so far as my office is concerned, it is very suitable I should have this honour. (Hear, hear.) I am proud to think that I am not only addressing my own countrymen and countrywomen, but also representatives of some of the great professions drawn from the various neighbouring countries of Europe. This is one of a series of revivals of that international effort towards attaining remedies which human society requires, which were prevalent before the late world troubles, but which, I am glad to say, now we have peace, are growing up again on every side. You thus put into the common stock the knowledge and science you possess in order to benefit humanity. There is to science no distinction between one country and another. All those engaged on this great humanitarian mission show an example of that international relation and effort which is so much desired. Your great pharmaceutical science stands high in the ranks of these scientific efforts to relieve human suffering and satisfy human needs. It is also in its essence bound up in science, and, like all the great professions, does not look so much upon personal interests as upon public needs. That is the only true note of a great profession. The Pharmaceutical Society has a great history stretching back some eighty years, and with its allied organisation, is one of those bodies started on private lines by private enterprise, subsequently recognised by the State and entrusted with many official functions. You are familiar with that system in England, and we find it far better and wiser to let private enterprise lead and then for the State to recognise it than to start the other way about and let the State begin. That is an example, and your organisation has grown up, as I said, in eighty years, and then it combines with another organisation, the Pharmaceutical Conference, not quite so old, and thus combined together celebrates its Diamond Jubilee. That is a considerable period to me—in fact, it covers the whole period of my life. So this Conference is assembled together in order to consider, with your foreign guests, how best to promote the various investigations, inquiries and activities of pharmacy. I congratulate you upon your effort, and I do not know what in these days is more worthy of interest and public support than the provision of scientific elements in medical and surgical science. Upon you rests the function of providing all that is best and most necessary for that science. You are part and parcel of that great body of opinion and effort which is delving deeper and deeper into the secrets of nature in order to provide what is necessary to relieve human suffering. I welcome the opportunity you have given me to meet you. I hope your efforts will be crowned with success, and assure you, on behalf of his Majesty's Government, you have our hearty welcome. (Great applause.)

The CHAIRMAN asked the President to convey the thanks of the Conference and of those assembled to the Lord President of the Council for his presence and address.

The PRESIDENT (Mr. E. T. Neathercoat, C.B.E.) said: It is my privilege, on behalf of the Society and in the name of the Conference, to express to you, my Lord

President, our best thanks for your attendance here. We consider it a great compliment to the pharmaceutical community you should have made it possible to spare the time to give us encouragement in our work. I must always remain a great compliment indeed that Minister of the Crown conferred the honour of his presence upon an official function of a public body such as ours, particularly if some, if not all, of our statutory functions are carried out under the auspices of that department over which you preside. This is probably a unique event in our history, as for the first time in our history the Conference is meeting under the ægis of the Society. It is holding its annual meeting in conjunction with the Pharmaceutical Conference. For the first time also we are honoured with the presence of the President of the Council. The Pharmaceutical Society in the course of its public activities is brought into touch with many of the Government departments



[Photo]

[Cleworth.]

The Marquis of Salisbury leaving the Conference. Mr. W. J. U. Woolcock is on the right.

but the department we are most concerned with is his Majesty's Council. I think we can fairly claim on behalf of the Society that during our eighty years' history we have played our part in administering more than one Act of Parliament, and that we have carried out the Society's statutory functions with a strong regard for the interest of the public. Moreover, we believe that some benefit has accrued directly to the whole community. (Hear, hear.) Therefore, on behalf of the Society, and in the name of the Conference, I beg to thank you, my Lord, for your presence here, and for the address and encouragement you have given us in our work. (Applause.)

The MARQUIS OF SALISBURY expressed his deep appreciation of the remarks of the President, and assured those present it had been a great pleasure to act as representative of the Government. He hoped it would not be the last time he would be called for to attend their conference. (Applause.)

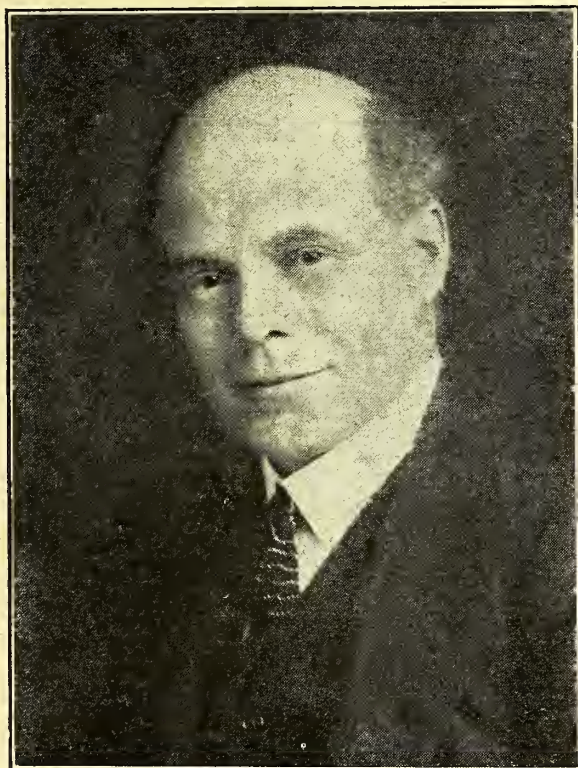
The chairman then read the following address.

The Conference, Past and Present

Opening Address delivered by Mr. F. W. GAMBLE, Ph.C., F.C.S.,
Chairman of the British Pharmaceutical Conference, on July 24

We inaugurate to-day the sixtieth meeting of the British Pharmaceutical Conference. In the circumstances that surround us I feel it to be my duty to indulge in some historical retrospect; to invite you to consider the motives of the founders of the Conference, to remind you of some of the work that the Conference has done, and to endeavour to infect you with the enthusiasm and spirit which have contributed so much to its social and scientific success.

This appears to be advisable for several reasons; we have with us many delegates of the International Pharmaceutical Federation to whom the history of this Conference may be unknown; we have the pleasure of extending a welcome to a larger gathering of pharmacists than has met at any previous Conference; we receive this year, owing to our adscription to the Pharmaceutical Society, a very large accession of new members to our ranks—those who, though members of the Pharmaceutical Society, were not actually associated with the work of the Conference. It is desirable that the interest of old and new members should be stimulated, so far as this can be done by some recital of the early history of this body, and some reference to the ideas that animated its energetic founders. We can, I think, derive guidance and perhaps encouragement from those giants of an earlier day whose insight was deep and keen enough to enable them to visualise and establish a scientific association of which the constitution has remained almost unaltered to the present day.



Photo]

[Elliott & Fry.

MR. F. W. GAMBLE, Ph.C., F.C.S.,
Chairman of the British Pharmaceutical Conference

which formed a "Year-Book of Pharmacy," both home and foreign. Reynolds adverted to Schacht's proposal, and made the definite suggestion that the next meeting of the British Association, which included many pharmacists amongst its members, should be made the opportunity of testing upon a small scale the feeling of pharmacists towards such a gathering. Brady, of Newcastle-on-Tyne, supported the suggestion to hold a preliminary meeting.

Schacht, however, objected to the formation of a new organisation for the holding of provincial meetings, and maintained that for the best interests of pharmacy in England it was expedient to hold the annual meetings of the Pharmaceutical Society not always in one fixed place, but in rotation at the various towns of importance where its members resided. He agreed that combination and association of the scientific pharmacists of the country was necessary to secure pharmaceutical progress. In August 1863 an invitation was issued by a number of influential persons to their pharmaceutical brethren to unite in a Conference to be held at Newcastle-upon-Tyne during the meeting of the British Association. The signatories to this invitation said that their names would guarantee that the proposal was not in the slightest degree antagonistic to the Pharmaceutical Society; they considered that the objects and interests of that Society would be promoted precisely to the extent

that the Conference became successful and influential. The Conference convened by this invitation met at Newcastle-on-Tyne in September 1863. Mr. Deane, of Clapham, was called to the chair, and Mr. Brady was requested to take notes of the proceedings. After an introductory address, a resolution establishing the British Pharmaceutical Conference was moved by Professor Bentley and seconded by Dr. Attfield. A constitution and rules were adopted and officers elected for the current year. Amongst the first Vice-Presidents were Redwood and Bentley; the first secretaries were Attfield and Reynolds. Daniel Hanbury was a member of the Executive Committee. Before the Conference met again the activities of Dr. Attfield had resulted in a membership roll of 200 names. For many years—with occasional exceptions, due to special circumstances—the Conference continued to arrange its meetings to coincide with those of the British Association. At the

ORIGIN OF THE BRITISH PHARMACEUTICAL CONFERENCE

The idea of an Annual Conference to be held out of London was a favourite one with Schacht, of Bristol, who had often urged that the Pharmaceutical Society should arrange for a periodical meeting of pharmacists in different parts of the country. His suggestion met with little practical support until in 1863 Reynolds of Leeds drew attention to the good work done by the British Association for the Advancement of Science in the scientific field generally, and by the American Pharmaceutical Association, established ten years previously, in the field of pharmaceutical science particularly. Reynolds described the American method of allotting subjects for investigation to individuals for report at the annual meeting, and referred to the inclusion in the published "Proceedings" of the American Association of a section

Birmingham meeting in 1865 the number of members had increased to 305; by 1869 they numbered 647; and at this meeting at Exeter, with an excess income over expenditure of £80, it was decided to publish a "Year-Book" or "Annual Report on the Progress of Pharmacy." Whilst, therefore, the Conference was founded in 1863, the first Year-Book bears the date 1870. The "Proceedings" of the Conferences 1864 to 1869 inclusive were, however, printed and circulated to members. There is in the Library of the Pharmaceutical Society a bound volume covering the proceedings of the first six Conferences.

OBJECTS OF THE FOUNDERS

The speeches of Deane, Bentley, and Atfield at the first meeting show clearly that uppermost in their minds as the primary object of the Conference was the "cultivation of pharmaceutical science." Bentley suggested the appointment of committees of working and competent observers to report upon subjects of great interest to pharmacists generally; Atfield was much impressed with the advantages that would accrue to pharmacy by the systematic arrangement and allotment of subjects for original research. These were men who believed in and fulfilled the dictum of Bacon: "Every man is a debtor to his profession from the which as men do of course receive countenance and profit so ought they to endeavour of themselves by way of amends to be a help and ornament thereto." Brady was particularly anxious that membership of the Conference should not be limited to those actually engaged in the practice of pharmacy. Dr. Edwards claimed for the new organisation the best wishes and anything more of the "old lady in Bloomsbury Square" who had rendered this movement possible by her School of Pharmacy which many of them claimed as their *alma mater*. At a period of acute division the new Conference had the blessing of all sections of pharmaceutical opinion. *THE CHEMIST AND DRUGGIST* gave its unsolicited support; the United Society of Chemists and Druggists took an active interest; "The Pharmaceutical Journal" said that members of the Society could hardly fail to approve of the objects of the Conference, which were quite congenial with the spirit and purpose of the Society; there might be a doubt as to whether the institution of a new society was necessary to carry out these objects, but it was understood that this question had been fully considered, and no doubt good and sufficient arguments had been advanced in justification of the plan that had been decided upon. "The Lancet" regarded the utility of the move as very obvious, and hoped that the results attained might be commensurate with the energy and ambitious range of research with which the inquiry was inaugurated.

Every member of the British Pharmaceutical Conference was expected to suggest subjects for investigation, to work upon subjects suggested by himself or by others, or to contribute information tending to throw light on questions relating to adulterations and impurities, or to collect and forward specimens whose examination would afford similar information, or in some other way to aid in the advancement of pharmacy. During the year following the preliminary meeting at Newcastle, forty subjects for investigation were accepted by workers, who undertook to report to the next Conference at Bath! It will be seen, then, that the Conference started its career with great *éclat*; it was supported by all the prominent pharmacists of the day, including many members of Council of the Pharmaceutical Society; the professors in the Society's School were amongst its most active officers. It may be asked, "Why did not the Society itself undertake this work?" I think it is not difficult to see the reason. The Pharmaceutical Society of that day was in a difficult position. It had about 2,000 members only of the 30,000 pharmacists in the country. The Pharmacy Act of 1852 had not yet been superseded; there was no compulsory examination. On the other hand, the General Medical Council was proposing to introduce into Parliament a Bill that would confine the dispensing of physicians' prescriptions to licentiates of Apothecaries Hall and the examiners, few in number, of the Pharmaceutical Society or other duly authorised body. Opposition to the Pharmaceutical Society was

strong; the United Society of Chemists and Druggists had many more members than the Pharmaceutical Society, and was keenly critical of the Society's doings. I believe that only an independent body could have commanded the immediate success that the Conference achieved; it brought into close contact members of the Society and their keenest opponents, all working for a common cause—that of the advancement of pharmaceutical science. That the Conference brought an accession of strength to the Society in subsequent years is undoubtedly the case.

A NEW PHASE

Through the sixty years of its existence the British Pharmaceutical Conference, if it has not always attained the high aims of its founders, has, at any rate, been inspired by their ideals. It has fostered research in pharmacy; its "Year-Books" record the work of its members who have contributed papers to the annual meetings, and provide the most valuable compendium of pharmacy in the English language. It has brought into scientific and social intercourse those members of the craft engaged in active work, to the great advantage of the members themselves and of the profession of pharmacy. Its meetings, in spite of the increased and increasing distractions of the social side, have retained the character of scientific meetings, where facts have the predominance over opinions, papers and statements are brief and to the point, and loquacity is out of place and is permitted only in the annual address and at the dinner. This year the Conference enters upon what we hope will prove to be an even more successful phase; the changes approved at the last annual meeting have been carried into effect, and we now find ourselves an important part of the organisation of the Pharmaceutical Society, though the work of the Conference is carried on by its own Executive and officers exactly as before the change took place. Whereas formerly delegates to the Conference, of whom many did not attend, were appointed by the local associations, now we have the pleasure of welcoming a large number of delegates from the newly formed branches of the Society up and down the country, many of whom probably are attending their first British Pharmaceutical Conference, whilst others are old friends. We shall look to these delegates to bring new strength to the Conference; we shall look to them for scientific papers. Why should not each branch make itself responsible for a definite piece of scientific work, to be reported upon at the Conference? If this Conference becomes political, its spirit will evaporate, its utility will be lost; science unites, politics divide. The object of this part of my address, as you may have surmised, is to emphasise the fact that the chief object of the founders of the Conference was to encourage research; I maintain that the success of the Conference through the sixty years of its existence has been largely due to the Fairs and the Wrights, who have cultivated the scientific spirit. I venture to think that if the Conference is to continue its successful course the scientific side must remain uppermost, and every member must regard it as his duty to make some contribution to the knowledge of pharmacy and the allied sciences. Holding this view very strongly, I should be strangely lacking in consistency if I did not devote the remainder of my address to matters connected with my own work and experience. I shall therefore ask for your attention whilst I refer to some substances of animal origin, largely used at the present time, about which something remains to be said from the pharmaceutical aspect.

ORGANOTHERAPY

Substances of animal origin play an increasing part in modern *materia medica*, though they still occupy but a small space in the standard text-books of that subject. An imposing and obscuring literature and terminology have grown up around these substances in recent years; it is certainly often difficult to decide which, if any, of two or more conflicting statements should be accepted. It is no part of my present purpose to refer to the uses to which animal preparations are put by the medical man prescribing them; it is, however, desirable that pharmacists should possess a knowledge as precise as possible of the nature

the glandular or other material and of its active principles if these are to be presented in the most suitable form. Many such principles possess an exceedingly high degree of physiological activity; whilst some are thermostable, others have their activity reduced or destroyed by heat. Their behaviour in solutions of different hydrogen-ion concentration is often important, their natural environment being such as to protect them from such changes. Animal glands are employed usually for their increted products; such internal secretions pass from the glandular cells directly into the blood stream, and so do not come under the influence of the digestive fluids. Many glandular substances are inert when taken by the mouth; thus the active principles of the suprarenal gland, of post-tubercular substance, and of the islet tissue of the pancreas are destroyed by the digestive enzymes, and they therefore require to be injected beneath the skin if their normal activity is to be obtained. On the other hand, the activity of thyroid substance is not destroyed by peptic or pancreatic digestion; its full activity is therefore obtained from oral administration.

THE THYROID AND PARATHYROID GLANDS

There are still conflicting opinions as to the functional inter-relationship between these glands; anatomically they are closely associated. In many animals four very small parathyroid glands are found, two exterior to the thyroid, but in close proximity, and two partially or wholly embedded in the thyroid. The embedded parathyroid tissue cannot be distinguished macroscopically from thyroid tissue, and in practice no attempt is made to separate them. It may be stated that all thyroid substance used in medicine contains a small proportion of parathyroid. Parathyroid gland substance, to be free from thyroid, must consist of the exterior parathyroid glands. Parathyroid gland substance is not readily identified by a positive chemical test; it, however, contains no iodine, and is thus distinguished from thyroid. The comparative physiological activity of different specimens of parathyroid can be judged by its destructive action on guanidine according to the method devised by Dr. Vines.

In the British Pharmacopœia, 1914, the thyroid glands of the sheep are alone official; the United States Pharmacopœia admits the thyroids of other animals, used as human food, such as oxen and pigs. The opinion has been expressed that ox thyroid is not suitable for medicinal use because of the proneness of oxen to tubercle; there would appear, however, to be no really sufficient reason for this exclusion. In fact, large quantities of frozen ox thyroids come into this country from abroad. Thyroid gland is characterised by the presence of a mixture of complex iodoproteins; a substance probably derived from these, thyroxine, to which the physiological activity of thyroid is attributed, has been isolated in crystalline form and shown to contain about 65 per cent. of iodine. There would appear to be no reason for preferring this costly and extremely powerful substance to preparations of the gland as commonly available. The United States and the British Pharmacopœias describe thyroid preparations made by drying and defatting the glands; the U.S.P. describes this powder as five times the strength of fresh gland, and a similar equivalent is usually accepted in this country. The U.S.P. requires that dry thyroid should contain not less than 0.17 and not more than 0.23 per cent. of organically combined iodine; the B.P. preparation is not standardised to an iodine content. If thyroxine be accepted as the active principle, the standardisation of dry thyroid by its iodine content is illogical, since the total amount of iodine present does not appear to correspond with the amount of thyroxine. Many samples of dry thyroid bear considerable dilution if the mean of 0.2 per cent. of iodine is accepted as the standard. There are also found in commerce thyroid powders and tablets made equivalent in strength to fresh gland, weight for weight. These owe their origin to the fact that, in the early days of thyroid treatment, fresh raw gland was ordered to be minced and given as a sandwich; the inconvenience of this method of administration led to the preparation of a powder equivalent in strength to fresh gland which had been in general use for many years before "thyroideum siccum" became official. The early makers of thyroid preparations therefore stated

doses in terms of fresh gland; the compilers of the B.P. appear, originally, to have applied the doses in use for the powder equivalent to fresh gland to a powder five times that strength. These doses have since been reduced, but they are still too large. Considerable confusion in regard to the doses of thyroid preparations has thus arisen, and it is essential that prescribers should make their wishes clear. It is now becoming customary for thyroid gland preparations to be labelled in terms of "thyroideum siccum," with or without its equivalent in fresh gland, on a basis of five parts of fresh gland equalling one part of thyroideum siccum, B.P. Thyroideum siccum, B.P., should not be adjusted to 0.2 per cent. of iodine; it often contains twice that amount of iodine in complex organic combination.

COD-LIVER OIL

The pharmacopœial monograph and the usual books of reference in which cod-liver oil is described give no clue to the very interesting biological history of this substance. It is now matter of common knowledge that, apart from its virtues as a fatty food of a readily assimilable type, cod-liver oil contains in the highest concentration yet found one or more members of the class of accessory food substances known as "vitamins," which possess an influence over nutrition comparable in the degree of their activity with the hormones of the secretory glands. The fat-soluble vitamin A of cod-liver oil is present in other animal fats, and especially in butter-fat; its concentration in cod-liver oil of the highest vitamin potency is 250 times greater than in butter. Investigation shows that the vitamins are chiefly, if not wholly, of vegetable origin. Vitamin A is synthesised in large quantities by marine diatoms in a sterile culture fluid, just as vitamin B is elaborated by the yeast plant. Diatoms and other marine plants make up the so-called phytoplankton which forms the food of the plankton fauna, consisting chiefly of small crustacea and mollusca. The zoo-plankton, in turn, forms the food of fish of all sizes, including the caplin, which in vast shoals attract the cod, and are its chief diet. The vitamin A present in cod-liver oil is therefore derived ultimately from marine plants. Land animals derive the corresponding vitamin from their vegetable diet and store a reserve in the liver. The vitamin A of cod-liver oil is readily destroyed by oxidation, though it is fairly stable towards heat. Investigation of different methods of preparing cod-liver oil, in the light of present-day knowledge, shows that the processes usually employed on the commercial scale do not destroy vitamin A to any appreciable extent, though different specimens of oil vary considerably in their vitamin concentration. This variation is attributable in part to diet, but more particularly to the physiological condition of the fish. Livers taken from cod that are in prime conditions and about to spawn yield a large percentage of oil which does not contain vitamin A in the highest concentration. Livers from immature fish, or from fish that are recovering from spawning, yield a lower percentage of oil of higher vitamin concentration. The roe of the cod contains a considerable concentration of vitamin A, and it seems likely that the richest oil would be yielded by fish that has returned to the feeding grounds after recovery from spawning. The concentration of vitamin A is determined by finding the amount of the sample of cod-liver oil required to restart growth in rats starved of vitamin A until growth ceased. This may be as little as 1.2 milligrams. The colour reaction obtained when cod-liver oil dissolved in chloroform or carbon disulphide is shaken with a drop of strong sulphuric acid is well known. This coloration was formerly attributed to the presence of cholesterol and lipochromes; examination of samples of oil differing in vitamin concentration shows, however, that the intensity of the colour produced by this test varies greatly, and appears to be roughly proportional to the vitamin concentration. The vitamin of cod-liver oil is associated with the unsaponifiable fraction which consists chiefly of cholesterol. It seems likely that cholesterol is involved in the reaction, though it does not alone, in the pure state, give this coloration. Oxidised cod-liver oil does not give the test satisfactorily, a brownish colour being produced. The "stearin" that

is separated from cod-liver oil during the process of cold-clearing is also rich in vitamin A. Its fishy odour can be removed and a tasteless odourless fat obtained by hydrogenation; this process does not appear to destroy more than a proportion of the vitamin present as judged by the colour test. These remarks upon cod-liver oil may be concluded with some references to the different Norwegian and Newfoundland varieties suitable for pharmaceutical use. Lofoten Norwegian oil is prepared wholly from the livers of *Gadus morrhua*; it is superior in flavour and colour to any other variety. It is obtained from prime fish before spawning, and has a vitamin concentration equivalent to a growth-producing dose of 2 milligrams. Finmarken Norwegian oil is not usually the product of *Gadus morrhua* solely, but includes the liver oil of other species of *Gadus*. Its vitamin concentration is often higher than that of Lofoten oil, though its colour and flavour are not always so satisfactory. Newfoundland oil is obtained from *Gadus morrhua* only; the vitamin content of some samples is very high (growth-producing dose 1.3–1.6 milligrams), but this probably depends again upon the physiological condition of the fish. It has been suggested that cod-liver oil should not be "cold-cleared," as the "stearin" removed by freezing, amounting often to 10 per cent. of the crude oil, is nearly as valuable as the liquid portion of the oil, and is readily digested. Uncleared oil is, however, unsightly and unsatisfactory from the pharmacists' point of view, as it readily deposits solid fat in cold weather.

PITUITARY GLAND

This gland may be regarded for the present purpose as consisting of an anterior and a posterior portion; the former comprising approximately 80 per cent. and the latter 20 per cent. of the whole. The anterior pituitary yields no activity to aqueous media so far as can be detected; solutions prepared from the whole gland therefore represent only the posterior portion. The whole gland, dried and powdered, is often given orally; since the activity of posterior pituitary is destroyed by pancreatic juice, powdered whole gland taken by the mouth can, if it has any action, exert only the activity of the anterior lobe, and of this very little is known. Solutions of whole gland given by the mouth are inactive. It is obvious that the use of pituitary gland preparations by the mouth is often unscientific. The posterior portion of the gland is easily dissected away from the anterior lobe, and solutions prepared from it have a very marked action when injected subcutaneously. Two important physiological effects are produced; there is a general rise in blood pressure owing to the contraction of blood vessels throughout the body, and the uterine muscle is caused to contract. The evidence points to the participation of at least two active principles in producing these effects, though as yet no principle possessing a satisfactory physiological action has been isolated. The use of a solution of posterior pituitary to raise blood pressure in shock and surgical emergencies and in obstetric practice to assist uterine contraction is now very considerable. Marked divergencies in activity between different preparations on the market led to an investigation as to the best methods of standardisation, and the report upon this subject issued on behalf of the Medical Research Council is of extreme value and importance. The British Pharmacopoeia does not yet take cognisance of post-pituitary solution; a solution equivalent to 10 per cent. of fresh substance is official in the United States Pharmacopoeia, and is ordered to be tested physiologically by a process described. Post-pituitary solutions can be tested physiologically by the effect they produce upon blood pressure or by their action upon uterine muscle. By such means one post-pituitary solution can be compared with another and their relative activity noted; to determine the absolute activity is less easy than in the case of drugs that are lethal. The U.S.P. requires post-pituitary solution to be tested by comparison with a solution of histamine, which exerts a somewhat similar but weaker action. It has been shown, however, that such a test is unsatisfactory. As a result of the excellent work referred to, a standard solution of post-pituitary substance prepared in

a precise manner is now made the criterion, and the activity of solutions judged by their effect upon the isolated uterus of the guinea-pig. Post-pituitary gland substance appears to show no seasonal variation. Its activity is destroyed by alkalis as well as by trypsin, and may be lost by adsorption on precipitates and filtering media unless its solutions have a suitable hydrogen-ion concentration. A solution equivalent to 10 per cent. of fresh post-pituitary substance is now becoming the standard strength for use in obstetric practice.

INSULIN

During the past year much attention has been directed to a discovery of outstanding importance in physiology and in practical medicine—that of a method by which an active preparation of the internal secretion of the pancreas can be obtained for use in diabetes. The story of insulin should possess a special interest for pharmacists. Physiological experiments had shown that the existence of such a hormone in the pancreas was certain; the name "Insulin" was given to it by Schafer many years before a means of separation was found. Different lines of research had converged upon the islets of Langerhans, so named after their discoverer, distributed through the lobules of the pancreas as the seat of elaboration of insulin. The islet tissue is in intimate relation with the blood-vessels of the pancreas, but is remote from the acinous cells which secrete the pancreatic zymogens. Many attempts to prepare an extract of pancreas containing the anti-diabetic principle had failed, in spite of unequivocal evidence of the presence of such a principle in the pancreas during life. The idea presented itself to Dr. Banting, of Toronto, that the principle might be lost in the process of extraction, not because of its own instability, but possibly through the destructive agency of the powerful ferments secreted by the pancreas. It was well known that by tying the pancreatic duct a partial degeneration of the pancreas could be brought about. This degeneration affects the cells secreting the digestive ferments, leaving the islet tissue and its blood capillaries intact. Such a partially degenerated pancreas might yield an active preparation of the islet principle, and experiment showed this to be the case. The activity of such a preparation was destroyed by boiling or by contact with pancreatic juice. Means were now devised for extracting normal pancreas by means of a solution that inhibited the tryptic ferment; an extract made with acidulated alcohol was found to be active and capable of keeping alive a depancreated dog. Experiments were then instituted to obtain a preparation from ox pancreas suitable for use in human diabetes. It was found that 50 per cent. alcohol extracted insulin from finely minced pancreas, whilst inhibiting the tryptic ferment. If the alcoholic strength of this solution be raised to 80 per cent. insulin is retained in solution whilst other substances are precipitated. This alcoholic solution is concentrated *in vacuo* at a very low temperature; fats and lipid substances are removed, and crude insulin is precipitated from the concentrate with absolute alcohol. The crude insulin is further purified by re-solution, precipitation as picrate, and conversion into the readily soluble hydrochloride. The process requires the most absolute control if loss of activity is to be avoided. Insulin is destroyed by heat, except for short periods in strongly acid solutions. Alkaline solutions lose their activity even at body temperature. It is readily absorbed by filtering media if its solutions have a hydrogen-ion concentration near the iso-electric point. The activity of insulin requires to be determined by physiological experiment. The dose is expressed in arbitrary units which represent the amount of insulin required to produce a certain effect when injected into a rabbit; the usual human dose is 10 units. Insulin is destroyed by the digestive ferments, and cannot therefore be administered orally. Subcutaneous injections are given twice daily. Insulin treatment enables the diabetic patient to assimilate carbohydrate; the immediate result of an injection is to cause a fall in the percentage of sugar present in the blood. If, owing to overdosage, this fall passes a certain level, symptoms of collapse supervene, which can be arrested by the

administration of glucose. To avoid this danger the dose of insulin is given shortly before a meal which includes carbohydrate food. Insulin must be stored in a cold place to avoid deterioration of activity. Nothing is yet certainly known as to the chemical nature of insulin; its isolation in a state of chemical purity has by no means been achieved, though in the state already attained its activity is intense. It is at present regarded as a protein derivative of a complex type. It is conjectured that an insulin-like body will be found in other organisms that assimilate sugar, and a substance possessing similar properties has been prepared from yeast and other rapidly growing vegetable cells. The discovery and isolation of insulin have given a tremendous impetus to physiological research, especially in relation to carbohydrate metabolism, and the additions to our knowledge are already astonishing. On the pharmaceutical side the difficulties involved in applying an extremely intricate and difficult process to large scale manufacture have been overcome, and recent improvements in the yield obtained promise that this country will be self-supporting, in spite of our disadvantage compared with America in the matter of raw material. The use of insulin in the treatment of diabetes requires to be controlled by frequent examinations of the blood of the patient to determine the percentage of sugar present. The technique of this operation is simple, and such as to be within the means of the well-trained pharmacist readily to accomplish. I strongly recommend pharmacists who wish to keep in the front rank of their craft to make themselves familiar with the chemical methods now in vogue for determining the percentage of sugar in blood, and to offer their services to medical men in that capacity.

GAPS IN OUR KNOWLEDGE

I have made no attempt to cover the whole range of animal substances called for in present-day pharmacy. The active principle of the suprarenal gland retains its position as an extremely valuable addition to materia medica; the oral administration of suprarenal substance in conditions associated with disease of these bodies has proved disappointing, and there is evidently a gap in our knowledge as yet unfilled. The digestive enzymes occupy a position of their own; their properties are well known, but they are employed for internal administration much less than formerly. In regard to many other glandular substances, it is unfortunately the case that they are often employed without sufficient warrant, by methods that cannot be justified on scientific grounds. Further chemical and biological investigations of these gland tissues are required to clear up the confusion that exists; they may yield results comparable in importance with those obtained by Banting and his colleagues.

VOTE OF THANKS

PROFESSOR H. S. GREENISH: We have heard from our chairman to-day an address that is characterised not only by what it tells us, but also by the stimulus it gives us to carry our researches further so as to produce results which will be interesting and valuable. Mr. Gamble has rightly divided his address roughly into two parts—(1) that relating to the history of the Conference, and (2) that dealing with organotherapeutic preparations. He has given us an interesting account of the rise and useful purpose the Conference has served, in addition to appealing to all of us to contribute to its work by taking over some piece of original work. I ask you to pass a very hearty vote of thanks to our chairman for his very excellent address to-day. (Applause.)

THE CHAIRMAN: I cannot help thinking as time goes by it is getting more and more difficult for chairmen of the Society to get out an address. There is an appalling prospect for future chairmen, in fact. (Laughter.)

MR. R. R. BENNETT (secretary) then read the report of the Executive Committee.

ANNUAL REPORT

The report stated that at the annual meeting of the British Pharmaceutical Conference held at Nottingham in

July last it was resolved that in future the Conference should be conducted under the auspices of the Pharmaceutical Society of Great Britain. This decision has necessitated certain changes in the constitution of the Conference. The Executive has framed a new constitution and rules, which were approved at a meeting of the Council of the Pharmaceutical Society in November last, and particulars were subsequently circulated to all those who were members of the Conference at the date of the amalgamation. The following honorary members of the Conference under the old constitution have been elected honorary members of the Pharmaceutical Society of Great Britain:—Messrs. R. T. Baker, E. Fourneau, W. C. van Gorcum, V. Haazen, H. Herisscy, J. J. Hofman, Henry Kraemer, Oliver Kusniek, A. B. Lyons, A. G. Perkin, A. Petit, A. Schamelhout, H. Shillinglaw, H. G. Smith, and H. W. Wiley. The honorary treasurer of the Conference, Mr. David Lloyd Howard, has also been elected an honorary member of the Society.

The 'Year-Book of Pharmacy' for 1923 will be published early in 1924. The present form will be retained, but, in addition to the abstracts and transactions at the annual meeting, the book will contain an epitome of certain matters which have hitherto appeared in the Society's calendar. Mr. J. O. Braithwaite has been reappointed editor of the abstracts in the "Year-Book," and he has agreed to act also as compiler of the New Remedies section. The thanks of the Executive are accorded to Dr. Thomas Stephenson for the services he has rendered in the past in connection with the New Remedies section.

TREASURER'S REPORT

The annual financial report, presented by the treasurer (Mr. D. Lloyd Howard) is summarised as follows:—

Income: Subscriptions, £520 18s. 8d. (last year, £564 10s. 6d.); sales of "Year-Book," £39 18s. 10d. (last year, £46 7s.); advertisements in "Year-Book," £78 1s. 6d. (last year, £74 19s. 7d.); accumulated interest on anonymous donation (allotted by Executive to cost of "Year-Book"), £117 3s. 9d. (last year, £31 5s.); total, £756 2s. 9d. Expenses: "Year-Book" (printing, editor's honorarium, etc.), £536 18s. 9d. (last year, £553 3s. 9d.); advertising costs, £17 6s. (last year, £26 0s. 10d.); secretarial expenses, £45; postage, etc., £25 10s. 5d.; stationery and sundries, £80 10s. 7d.; total (including deficit of £235 13s. 2d.), £942 18s. 11d.

The financial statements of the Bell and Hills Fund and of the Conference Research Fund are also included in the report.

THE TREASURER (Mr. D. Lloyd Howard), in presenting his report, drew attention to one or two peculiarities, the most important, he said, being that the Executive Committee had appropriated the accumulated interest of the anonymous gift towards the reduction of the deficit. It was felt that as this increase in the deficit had been devoted to keeping up the Year Book it was a matter well within the intention of the donor in making his anonymous gift. The receipts from subscriptions showed a slight falling off, which he did not think was so very important, as by the change now being accomplished the burdens of the Conference would be borne in a different way, and consequently the revenue would have lessened. So that, although there was a reduction in expenditure, the loss on the year's working, apart from the anonymous gift, was about £68. As usual, the balance-sheet showed a number of substantial liabilities which also appeared in the expenses of the year, which fact was due to the Conference being short of money and unable to pay its account in any one year. The new arrangement had worked extraordinarily well. The Society had taken over the burden and publication of the Year Book, and they had given in addition a grant in aid which had enabled them to pay their accounts. Now that the balance in hand was supplemented by a small annual income they would be solvent. The treasurer's duties would be lighter; in fact, next year would merely make necessary the production of a petty-cash account. He felt that a great honour had been done him in his election to honorary membership. Such honorary membership was, in his view, equivalent to a degree by one of the old universities. In fact, there was no honorary degree higher in value.

MR. C. A. HILL moved the adoption of the treasurer's report, which was seconded by Mr. J. RUTHERFORD HILL and carried unanimously.

Science Section—Tuesday Morning

The Science Section commenced its sitting at 11.30. The first paper taken was:—

Bismuth Tetroxide Prepared from Sodium Bismuthate

By C. E. CORFIELD, B.Sc., F.I.C., Ph.C., AND
ELSIE WOODWARD, A.I.C., Ph.C.

[ABSTRACT]

THIS investigation was first suggested by the finding of a bottle containing several ounces of a brown powder labelled "bismuth pentoxide, Bi_2O_5 , prepared in the Pharmaceutical Society's Laboratories and presented by Mr. John Davies 1879." Interest in the subject is due also to the use of sodium bismuthate as an oxidising agent in steel analysis, to which substance the formula NaBiO_3 is frequently assigned. A glance at some of the standard text-books and chemical dictionaries will reveal the fact that the literature contains many contradictory statements, and the authors proceed to quote from some of the more important investigators of the subject to illustrate this point. The specimen of "Bismuth pentoxide" was examined, and analysis showed that it was certainly not bismuth pentoxide nor tetroxide; it appeared to consist mainly of bismuth trioxide and contains potassium and a considerable quantity of nitrate as impurities. It was thought that the higher oxides of bismuth might be obtained from sodium bismuthate prepared by a method different from those of previous investigators. Accordingly sodium bismuthate was prepared by a process published in a paper by Reddrop and Ramage ("Jour. Chem. Soc. T.," 1895, 268); the details of this method are as follows: 20 gm. sodium hydroxide are heated nearly to redness in an iron crucible, 10 gm. bismuth oxynitrate (previously dried in a water-oven) gradually added, then 2 gm. sodium peroxide; the whole mass is fused, poured on to an iron plate to cool, broken up, extracted with water, and the insoluble portion collected on a filter, washed thoroughly, dried in a water-oven, and finely powdered. The substance thus prepared is orange yellow in colour; even after long washing it is alkaline in reaction, but contained no trace of nitrate; if this substance is calculated as anhydrous, it has the following percentage composition: Bi_2O_3 , 83.41 per cent.; available O, 5.65 per cent.; Na_2O , 10.95 per cent.; Bi_2O_5 , 83.41 per cent. The formula NaBiO_3 , required: Bi_2O_3 , 83.15 per cent.; available O, 5.73 per cent.; Na_2O , 11.11 per cent. On comparing these last two sets of figures it is seen that they very nearly correspond, but we cannot assign any simple formula to our product, since the proportion of water present does not correspond with either $\text{NaBiO}_3 \cdot \text{H}_2\text{O}$ or $\text{NaBiO}_3 \cdot 2\text{H}_2\text{O}$; we can assume that the substance consists mainly of NaBiO_3 , and is hydrated. It is alkaline in reaction, possibly owing to the fact that bismuthic acid is a weak acid and the salt is partly hydrolysed. This substance was used as a starting-point in our endeavours to prepare the higher oxides. Specimens were prepared by several methods (all of which are described), and four of the resultant products did not give the required percentages, and a further experiment by the following method yielded a product which in the authors' opinion is a bismuth tetroxide in the hydrated condition:—

200 gm. sodium bismuthate were added gradually, with frequent shaking, to 2 litres dilute nitric acid (1 in 3), cooled by immersion in ice; the mixture was allowed to stand for three days, the pink supernatant liquid decanted, the product collected on a filter, washed slowly with 1 litre dilute nitric acid (1 in 3), cooled to 0° , then with 3 litres water cooled to 0° , and dried over sulphuric acid until its weight was constant. This time the evolution of gas was less marked, and the filtrate was pink as before; the product weighed 25 gm., and was chocolate-brown in colour; it gave on analysis:

Bismuth	...	...	81.85 per cent.
Available O	...	...	3.05 "
H_2O}	...	...	5.79 "
Loss on ignition	...	...	8.75 "

Using the formula Bi_2O_4 for bismuth tetroxide, 81.85 parts bismuth require 3.15 parts available oxygen, so that the figure given above is by no means far removed from the theoretical. The percentage compositions corresponding to the formulas $\text{Bi}_2\text{O}_4 \cdot \text{H}_2\text{O}$ and $\text{Bi}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ are as follows:—

$\text{Bi}_2\text{O}_4 \cdot \text{H}_2\text{O}$: Bi, 83.54 per cent.; available O, 3.21 per cent.; H_2O , 3.61 per cent.

$\text{Bi}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$: Bi, 80.65 per cent.; available O, 3.10 per cent.; H_2O , 6.98 per cent.

On comparing these figures with those obtained on analysis of our product (5), it is apparent that no simple formula can be assigned to the latter, since its composition seems to be somewhere between $\text{Bi}_2\text{O}_4 \cdot \text{H}_2\text{O}$ and $\text{Bi}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$. Many more experiments were carried out. Previous investigators have in many cases prepared scarlet substances, assumed by some to be bismuthic acid or bismuth pentoxide; and chocolate-brown products corresponding to the tetroxide or one of its hydrates. In experiments all the authors' preparations have been of a red-brown or chocolate-brown colour. Considerable attention was given to the selection of the methods used in the analysis, and the authors describe exactly what processes were followed. It was shown also that any attempt to drive off water at the same time removes oxygen. The authors conclude that bismuthic acid and bismuth pentoxide cannot be prepared from sodium bismuthate by decomposition with nitric acid. There is, however, ample evidence for the existence of a tetroxide of bismuth, and they claim to have prepared such a substance in a hydrated condition; if a bismuthic acid or bismuth pentoxide could be formed these compounds would be unstable and would immediately decompose into the tetroxide with loss of oxygen. A definite formula cannot be assigned to the product, but its degree of hydration lies between 1 and 2 molecules of water, and they are unable to remove this or reduce it to 1 molecule without loss of oxygen.

DISCUSSION

The CHAIRMAN, in inviting comments, remarked that this was the type of paper that was expected from the Pharmaceutical Society's research laboratory.

Mr. SAGE pointed out that bismuth was not always a pure metal, and inquired what steps the authors had taken to find out the impurities in the metal they used. In the cases of lead and antimony an almost infinitesimal percentage of silver would make all the difference in the oxides obtained. Published formulae were seldom attained in actual practice.

Mr. BROWN (Ludlow) asked whether the effect of light on bismuth had been considered.

Mr. CORFIELD, replying, said that the bismuth used was chemically pure—99.95 per cent. by ordinary methods. He agreed that a small percentage of impurity would influence the product obtained; but, while a small percentage might account for some loss of available oxygen, it would not account for the difference if we assumed the presence of pentoxide. The authors had not examined the influence of light on these substances, but he had welcomed Mr. Brown's contribution to discussion with particular pleasure, as he served his apprenticeship to him.

The CHAIRMAN, in conveying the thanks of the Section, remarked that the paper not only threw light on these oxides, but was a step towards a whole course of bismuth investigation.

The next paper was:—

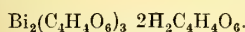
Bismuth and Sodium Bismuth Tartrates

By C. E. CORFIELD, B.Sc., F.I.C., Ph.C., AND
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[ABSTRACT]

ACID preparations of alkali bismuth tartrates have been prescribed for some years for oral administration, and as neutral substances, also described as alkali bismuth tartrates, are now being recommended for injection in the treatment of protozoal diseases, further knowledge of the

chemistry of these compounds is desirable. Before proceeding with the investigation of these alkali compounds, it was decided to examine some simple bismuth tartrates owing to the contradictory statements concerning their constitution which appear in the literature on the subject. The authors proceed to give examples of the investigations of the earlier workers, afterwards describing their own methods of procedure as follows: First, we prepared bismuth tartrate by double decomposition between Rochelle salt and bismuth oxytartrate. Quantities were taken such that theoretically normal bismuth tartrate $\text{Bi}_2(\text{C}_4\text{H}_4\text{O}_6)_3$ would be formed. The bismuth was determined by igniting in presence of a few drops of concentrated nitric acid and weighing as Bi_2O_3 . The tartrate content was determined by separation as potassium acid tartrate and subsequent titration. The bismuth radicle found was =68.04 per cent., and the tartrate radicle was =39.69 per cent., the ratio of $\text{Bi} : \text{C}_4\text{H}_4\text{O}_6$ being 1.04 : 1. The substance therefore is not the normal tartrate, which requires $\text{Bi} : \text{C}_4\text{H}_4\text{O}_6 = 1.5$. Two oxytartrates are theoretically possible, namely $\text{Bi}_2\text{O}(\text{C}_4\text{H}_4\text{O}_6)_2$ and $\text{Bi}_2\text{O}_2(\text{C}_4\text{H}_4\text{O}_6)$ formed respectively by loss of one and two molecules of tartaric acid from the normal tartrate molecule. In the first case the ratio of $\text{Bi} : \text{C}_4\text{H}_4\text{O}_6$ is 1 : 1, in the second as 2 : 1. From consideration of these facts it seems probable that the product we have prepared consists chiefly of $\text{Bi}_2\text{O}(\text{C}_4\text{H}_4\text{O}_6)_2$ associated with a little $\text{Bi}_2\text{O}_2(\text{C}_4\text{H}_4\text{O}_6)$. After preparing bismuth tartrate by means of dilute solutions, the precipitate was found to have the composition: $\text{Bi} = 58.38$ per cent., $\text{C}_4\text{H}_4\text{O}_6 = 39.52$ per cent. Ratio $\text{Bi} : \text{C}_4\text{H}_4\text{O}_6 = 1.08 : 1$. The figures indicate that dilution tends to increase hydrolysis as is found in the case of other bismuth salts, the proportion of $\text{Bi}_2\text{O}_2(\text{C}_4\text{H}_4\text{O}_6)$ being larger than in the precipitate from concentrated solutions. Bismuth tartrate was also prepared by precipitation in acetic acid solution as a result of double decomposition between sodium tartrate and normal bismuth nitrate. On analysis it was found to contain 57.69 per cent. of Bi , which shows that hydrolysis is inhibited to some extent by the presence of acetic acid. A bismuth tartrate was prepared by modification of the method used in the preparation of liq. bismuth et ammon. cit., B.P., 1898 (C. & D., February 8, 1913). On analysis it gave a ratio of $\text{Bi} : \text{C}_4\text{H}_4\text{O}_6 = 1.17 : 1$. The composition indicates that hydrolysis is increased on neutralising the nitric acid by the addition of bicarbonate, and that the product is not a simple bismuth oxytartrate. This precipitated bismuth tartrate was digested with hot tartaric acid solution until no more would dissolve and the liquid filtered and allowed to cool. A crystalline precipitate formed. Analysis showed the following composition: $\text{Bi} = 35.45$ per cent., $\text{C}_4\text{H}_4\text{O}_6 = 65.56$ per cent. Ratio $\text{Bi} : \text{C}_4\text{H}_4\text{O}_6 = 1 : 2.6$. This is probably an acid tartrate of definite composition corresponding to the formula—



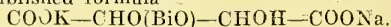
References in the literature to soluble compounds of bismuth tartrates with alkalis are associated, as might be expected, with simple bismuth tartrate. Most investigators noticed the ease with which the bismuth tartrates they prepared dissolved in solutions of alkali hydroxides and carbonates. At the present time the alkali compounds of bismuth tartrate may be divided into two classes, neutral (soluble or insoluble), and more or less acid (soluble). Neutral preparations are injected intermuscularly in protozoal diseases; acid compounds are prescribed for digestive complaints in conjunction with pepsin. The neutral bodies are frequently described as "Tartrobismuthates," or "Bismuthyl tartrates," and the acid compounds as "Bismuth tartrate soluble."

Neutral Preparations.—Various investigators of the effect of these compounds in the treatment of syphilis used the modified official solution mentioned above. This bismuth tartrate (precipitated as described) is dissolved while still moist in 230 c.c. N/1 sodium hydroxide. As a starting-point we prepared this solution (A). The original solution was evaporated and yielded a transparent vitreous residue (B) insoluble in water but readily soluble on the addition of a little sodium hydroxide. Bismuth in the residue was determined as oxide. The filtrate from the hydrogen sulphide stage of the process towards the oxide was used to determine the tartrate present. The percentage of sodium was calculated from the quantity of sodium hydroxide added and the weight of the dried residue. As the ratio of bismuth and sodium atoms and tartrate radicle does not correspond to simple whole numbers, the authors suggest that the solution contains a mixture of substances. (See attached chart for relationship of neutral preparations.) The residue (B) was dissolved in the smallest quantity of dilute sodium hydroxide and poured into 97 per cent. alcohol. A white precipitate was formed. (C) The sodium content was determined as sulphate. Solution (A) was poured into excess of 97 per cent. alcohol. A white bulky precipitate was produced and dried (D). The solution (A) was diluted with water, poured into 97 per cent. alcohol of such a volume that the final liquid consisted of 50 per cent. alcohol, and the white precipitate filtered off, washed, and dried. The nature of this precipitate differed remarkably from that of residue (D). When moist it was semi-gelatinous and soluble in water; but on air drying became gummy and transparent; when placed for an hour or two in a steam-oven and residue disintegrated owing to loss of water, formed a sandy powder (E). The percentage composition does not correspond to a simple ratio, and we conclude that the product is a mixture. This substance, associated with other compounds, probably occurs in all the alkali bismuth preparations we have examined. The alcoholic filtrate, after the precipitation of residue (E), was neutral; on evaporation to dryness a crystalline residue of neutral sodium tartrate was obtained. This result agrees with the difference in composition between residue (B) and residue (E), and

CHART SHOWING RELATIONSHIP OF NEUTRAL PREPARATIONS.

	A	B	C	D	E	X	Y
Method of preparation	Method given by Cowley (modification of method for preparation of Liq. Bis. et Am. Cit., 98)	From A by evaporation to dryness	From B. by Soln. in dil. NaOH and precipitation with alcohol	From A. by precipitation with strong alcohol	From A. or D. by precipitation with 50 per cent. alcohol		
Physical Character	Clear aqueous solution	Greyish-white, vitreous granules	White, vitreous granules	White amorphous powder	White sandy powder	White amorphous powder suspended in oil	Clear aqueous solution
Solubility ..	White ppt. produced on warming or standing for some time	Insol. in cold or hot water soluble in dilute NaOH solution	Soluble in cold and hot water	Soluble in cold and hot water	Insol. in cold or hot water	Oil-free residue insol. in cold or hot water	No ppt. on boiling solution
Reaction to litmus	Neutral		Slightly alkaline	Neutral			Neutral
Per cent. Bi		52.75	62.60	56.98	61.22	61.49	39.83
Per cent. $\text{C}_4\text{H}_4\text{O}_6$..		31.50	27.42	31.78	24.63		
Per cent. Na ..		6.81	5.31	6.34	3.39		
Ratio Bi : $\text{C}_4\text{H}_4\text{O}_6$: Na ..		In no	case a simple	ratio			

appears to substantiate our supposition that solution (A) contains a mixture of substances. From these considerations it would be expected that the sodium tartrate would remain in residue (D) owing to its insolubility in strong spirit, but that it could be removed by treatment with 50 per cent. alcohol. This we found to be actually the case. Before concluding our work on the neutral substances, we examined two commercial samples, X and Y, of this class of compound. (See chart.) Both preparations contained potassium in addition to sodium, but the advantage gained by the presence of potassium we are unable to appreciate. The examination shows that commercial preparations exhibit the same diversity of composition as the substances we have prepared, and confirms the observation of Barthe ("Bull. Soc. Pharm. Bordeaux," 1922, 60, 20) that commercial samples of potassium and sodium tartrobismuthates do not correspond to the published formula—



Acid Preparations.—The acid preparations of bismuth tartrate generally contain sodium and are prepared by the interaction of sodium acid tartrate and bismuth oxide and hydrated oxide. After filtering off the excess of bismuth oxide and evaporating a syrup is produced that can be rapidly scaled, and it is in this form that most of the commercial samples are met with. Two commercial specimens were examined, and it was shown how probably there is little uniformity in commercial preparations in regard to the percentage of acidity, bismuth tartaric radicle and sodium. After experimenting with three modifications of the method of preparation the authors conclude that time and temperature have a decided influence on the composition of the product and that the method is one which is not likely to yield a substance of uniform consistence unless the conditions are strictly adhered to. That a connection exists between the "neutral" and "acid" preparations is strikingly demonstrated by the nature of the precipitates formed when solutions of the "acid" compounds are treated with concentrated and diluted alcohol. Both commercial samples were treated in this way, and from the observations we conclude that the residue (E) is a well-defined substance contained in all the preparations we have examined, it is associated with varying proportions of sodium tartrate in the "neutral" compounds, and sodium tartrate and sodium acid tartrate in the "acid" compounds. Analysis, however, does not show a simple relationship between the atoms Bi and Na and the $\text{C}_4\text{H}_4\text{O}_6$ radicle, and we are therefore led to suggest that it is itself a mixture of two or more compounds which we have not separated by the methods employed.

Realising that an acid preparation of uniform bismuth content and definite acidity is desirable, we suggest the following method by which it may be obtained. To the solution (A), which is neutral to litmus and of uniform composition, prepared by dissolving freshly-precipitated bismuth oxytartrate in solution of sodium hydroxide, may be added a definite proportion of tartaric acid or sodium acid tartrate. In each case, if the resulting mixture be evaporated, the white precipitate produced will be dissolved up, and a clear syrup formed from which a scale preparation may be obtained. The main conclusions are as follows:—

Bismuth tartrates prepared by precipitation are mixtures of oxytartrates. By digesting the oxyalts in tartaric acid a crystalline acid substance may be obtained which corresponds to a compound of definite formula. By reason of the different methods of administering the alkali bismuth tartrates a distinction should be made between the "acid" and "neutral" substances so that no ambiguity can arise concerning them. There is no uniformity in the composition of the different commercial preparations of either class; the substances we have prepared and examined are mixtures of more or less complex bismuth compounds.

If a neutral soluble bismuth preparation in a solid condition is required for injection in protozoal diseases in aqueous solution or suspended in oil, we recommend, subject to confirmation of physiological activity, the use of

preparation (D). The preparation obtained by the addition of tartaric acid or sodium acid tartrate to solution (A), with subsequent evaporation, is recommended for use where an acid substance is required for oral administration in digestive complaints. By the method suggested, a preparation of uniform acidity and bismuth content can be obtained.

DISCUSSION

The CHAIRMAN said that the paper was a highly important addition to their knowledge on the subject. It was always alarming to find wide variations in preparations which purported to have similar properties. It must be very disconcerting for medical men who wished to get comparative results to discover the substances they use varying as much as from 30 to 60 per cent. He thought the authors had done very useful work; it had required a great deal of investigation to produce a paper like that. While he was of opinion they had not reached a final conclusion, he thought they were on the right road.

MR. T. MORSON also extended his congratulations to the authors, and said that, in his view, they had still a great deal more to do. One criticism he had to offer was in regard to the use of the term "bismuth oxide." That was an exceedingly intractable salt and one they would not in practice dream of using in the manufacture of any sort of bismuth preparation. The root of the whole trouble from a manufacturer's point of view was the composition of hydrated bismuth oxide. In practice manufacturers worked from a hydrate. The composition of that hydrate was not at all clear, as it varied considerably according to the conditions under which it was made. An interesting commentary on that was found in the old Codex. He (the speaker) was one of the first who made bismuth tartrate on anything like a large scale in this country. In order to test its content, he recently obtained samples from every possible source, and was not altogether surprised to find that not a single bismuth hydroxide was amenable to the solution test in the Codex. That, he suggested, was the real bottom of the matter, and it was the starting-point of manufacture. Unless they knew what the starting-point was they always ran the risk of variation. He very much welcomed the authors' views upon that work, as by that means was opened up the whole question of the content of bismuth hydroxide.

MR. FOURCARE drew attention to the paragraph in the address regarding "the advantage gained by the presence of potassium." He would like to suggest that the use of potassium in place of sodium should be carried out much further than it has been, because in potassium they were likely to find a salt having a much greater effect on the growth of protozoal content.

The CHAIRMAN said he was sure that in the comparatively academic haunts of Bloomsbury Square it was refreshing to hear a manufacturer's point of view put forward. Quite different ideas prevailed in large-scale operations as against small-scale experiments.

MR. CORFIELD said they prepared a number of specimens of bismuth oxide and also prepared examples of bismuth sodium tartrate or hydrated oxide. In each case the product varied, but at the moment he was not disposed to think that the variation in bismuth oxide itself was very important. Even shaking the samples would practically separate the two substances. He would think the medical men, if they were using a soluble bismuth preparation, would use something of definite proportions, and it was clearly up to the manufacturers to supply a uniform product. They were agreed that the common method of digesting it was one making it difficult to obtain a uniform composition, but they had gone further. He was glad to be able to announce that one of the best-known pharmacologists had offered to investigate the use of these bismuth compounds in the treatment of syphilis.

The CHAIRMAN announced that, as the available time before luncheon was practically exhausted, the remaining paper allotted to that morning would be transferred to the afternoon session. The section then adjourned.

Science Section—Tuesday Afternoon

A good muster of members had assembled when, just after 2.30, the chairman called for silence. The first paper taken was:—

Examination of the Bark of *Erythrophloeum Guineense*

By CYRIL W. MAPLETHORPE

[ABSTRACT].

THE bark of the *Erythrophloeum guineense* (G. Don) is known under a number of common names, such as "sassy bark," "mancona bark," "red water bark" and "casca bark." It has poisonous properties, and for a long time has been in use in Africa as an ordeal poison. Various workers have examined the bark and have obtained a variety of results. The first investigation appears to have been conducted by Gallois and Hardy. They describe the bark as occurring in flattened, irregular pieces of reddish-brown colour with a rough surface, and say that it is hard, fibrous, and without odour, causing violent sneezing when powdered. From the bark they isolated a toxic alkaloid which they called erythrophleine. They described erythrophleine as being colourless, crystalline, and soluble in water, alcohol, amyl alcohol, and ethyl acetate, but only slightly soluble in ether and chloroform. The alkaloid was stated to give a crystalline hydrochloride and platinohydrochloride. The bark of *Erythrophloeum coumunga*, Baill., was also examined by them, and they found indications of an alkaloid allied to or identical with that present in *E. guineense*. According to the description given by Planchon, the mature bark of *E. coumunga* somewhat closely resembles that of *E. guineense*, but differs by its greater thickness, more pungent taste, more abundant periderm, and absence of bast fibres. The alkaloid erythrophleine was examined by Harnack and Zaborocki. From the analysis of the double platinum salt Harnack considered the formula for the base to be either $C_{28}H_{43}O_7N$ or $C_{26}H_{41}O_7N$. The bark of *E. coumunga* was examined by Laborde, who stated that from it he obtained an alkaloid which was apparently identical with erythrophleine. He found the alkaloid in quantities of about 0.4 per cent., and obtained crystalline specimens of both the base and the hydrochloride. The most recent examination of the bark of *E. guineense* appears to be that of Power and Salway. The bark they employed came from the Belgian Congo, West Africa, and was collected from living trees. They obtained the alkaloid in small quantities, but were unable to prepare any crystalline salts. The proportion of alkaloid which they isolated represented only 0.008 per cent. of the weight of the bark employed. From an analysis of the hydrochloride they concluded that $C_{26}H_{41}O_7N$ was the probable formula for the base. This agrees with one of Harnack's suggested formulas. They state, however, that the substance was of too indefinite a character to permit of any deduction respecting its ultimate composition. Henry describes the alkaloid as an amorphous yellow powder. It is stated to be a heart poison resembling digitalin in its physiological action. Local anæsthetic properties are claimed for the alkaloid, and the hydrochloride has been recommended for use in dental surgery. A 50 per cent. solution of the hydrochloride in eugenol has been named "throphleol," and is found of value in devitalising dental pulp. Power and Salway consider it probable that the varying results obtained in the various investigations of sassy bark may be attributed, as Harnack and others have suggested, to the use of barks from different species of *Erythrophloeum*, or possibly from varieties of the same species.

In response to a request from Professor Greenish, Mr. Alleyne Leechman, Director of the Amani Research Institute, recently taken over from the Germans, forwarded a quantity of the bark of *E. guineense*, collected from trees growing in the Institute grounds. This bark was much younger than that which has appeared from time to time in English commerce, and which was evidently obtained from trunks of considerable size. It was in single or

occasionally double quills, about 0.5 metre long and 1.5 to 5 cm. wide, or in smaller pieces, the bark itself being up to about 5 mm. thick. It was practically odourless, but the powder was powerfully sternutatory. The taste was bitterish and slightly astringent. Some difficulty was experienced in powdering the bark with the apparatus in the Research Laboratory, and a supply of the bark was therefore sent to Wright, Layman & Umney, Ltd., who kindly ground it.

A quantity of 25 gm. of the powdered bark was extracted in a Soxhlet with a series of solvents. The thimble was taken from the Soxhlet and dried on each occasion before proceeding to the next extraction with a fresh solvent. In each case the solution obtained was distilled, the residue dried, and its appearance noted. It was then tested for the presence of alkaloid by extracting it with water acidified with sulphuric acid and adding Mayer's solution. After the alcohol extraction the residual bark was dried and introduced into a stoppered cylinder and shaken for three days with cold distilled water. This liquid was filtered and the proportion of extracted matter determined in the filtrate. The following results were obtained:—

Solvent	Appearance	Reaction with Mayer's re-agent	Extract per cent.
Petroleum spirit	Green-coloured, fatty material	Nil	4.56
Ether	Yellow, amorphous, resinous	Ppt.	0.60
Chloroform ..	Brown, resinous	Nil	0.45
Ethyl Acetate ..	Reddish-brown, amorphous, resinous, not transparent	Nil	2.22
Alcohol	Dark brown, brittle, resinous	Nil	10.91
Water	Brown, resinous, hygroscopic	Nil	1.25
Total ..			19.99

The amount of extract is calculated on air-dried drug.

Extraction of the Alkaloid.—Fifty gm. of the bark was taken and completely exhausted in a Soxhlet extractor with 90 per cent. alcohol. The bulk of the alcohol was distilled off from the extract and the liquid filtered. The filtrate was made up to a definite volume (470 c.c.) with 90 per cent. alcohol and the amount of total solids in it determined. From this the percentage of alcohol-soluble matter in the bark was calculated and found to be 22.24. The extracted bark was removed from the Soxhlet and dried. It was then introduced into a stoppered cylinder and 500 c.c. of distilled water was added. The mixture was shaken frequently during three days. It was then allowed to settle and the supernatant liquid filtered off. The filtrate was a pale, straw-coloured liquid. A determination of the total solids in it showed that water extracts 1.32 per cent. from the bark after extraction with alcohol. The alcoholic solution obtained as indicated was dark brown in colour. Portions of it were treated in various ways with a view to separating the alkaloid.

1. The first method used was to take 100 c.c. of the extract and dilute it to 350 c.c. with 1 per cent. hydrochloric acid. A slight precipitate formed, which was filtered off. The remaining liquid was very dark in colour and of large bulk. The method was, therefore, abandoned in favour of others which would get rid of colouring matter to a larger extent.

2. 100 c.c. of the extract was taken and evaporated on the water bath to a pasty mass. This residue was dissolved, whilst still warm, in 15 c.c. of glacial acetic acid. A clear solution resulted. This was poured into distilled water, and the total volume made up to 250 c.c. A heavy, flocculent precipitate was formed, and, after standing for twelve hours, filtered off. 227 c.c. of a clear, pale brown liquid was obtained, which frothed very freely when shaken, indicating the possible presence of a saponin. This acid liquid was introduced into a separator and shaken with four portions of 20 c.c. each of ether. The ether was drawn off and evaporated. The residue thus obtained was brownish in colour and

resinous in appearance. A portion of this residue was tested for alkaloid, but it gave a negative result. The solution was then made alkaline with 10 c.c. of strong solution of ammonia and shaken with ether. The mixture formed a troublesome emulsion which was separated and shaken separately with large volumes of ether. In all about 400 c.c. of ether was used in the extraction. The bulk of the ether was distilled off, and the residue was evaporated to dryness in a weighed dish. The residue was amorphous and appeared like a clear, pale yellow varnish.

3. This experiment was carried out in the same way as No. 2, but the alkaloidal residue obtained was purified by dissolving it in 5 c.c. of glacial acetic acid, pouring the solution into water, and filtering the cloudy solution through kieselguhr after standing twelve hours. The filtered liquid was made alkaline with ammonia and extracted with ether. The ethereal solution was filtered, evaporated, and weighed.

4. Experiment No. 2 was repeated, using 10 gm. of tartaric acid in place of 15 c.c. of glacial acetic acid. A similar residue was obtained. This was purified by dissolving it in a small quantity of water in which 2 gm. of tartaric acid was dissolved. After standing it was filtered from a whitish substance of resinous appearance which floated on the surface. The filtrate was made alkaline with ammonia, extracted with ether, the ethereal solution washed, evaporated, and the residue weighed; it amounted to 0.07 per cent. of the bark.

No.	Non-alkaloidal residue obtained from acid solution	First alkaloidal residue	Purified alkaloidal residue
	Per cent.	Per cent.	
1	0.37	0.22	—
2	0.37	0.20	0.10
3	0.37	0.13	0.07

Acetic acid was used in 1 and 2, and tartaric acid in 3.

A series of six experiments was next made by extracting the powdered bark by the Keller process. The details for extractions 1, 2, 3 and 4 were as follows:—25 gm. of bark was introduced into a narrow-mouthed corked bottle of about 500 c.c. capacity; 200 c.c. of ether and 50 c.c. of chloroform were added, followed after a few minutes by 10 c.c. of solution of ammonia. The mixture was shaken vigorously for thirty minutes, and then sufficient distilled water added to make the powder agglomerate. The mixture was shaken occasionally and allowed to stand overnight. An aliquot portion of the ethereal liquid was then poured off, introduced into a separator and shaken with successive quantities of dilute hydrochloric acid (1 per cent. of HCl) until the acid gave no alkaloidal reaction when tested with Mayer's reagent. The mixed acid liquids were then made alkaline with solution of ammonia and extracted with successive quantities of a mixture of ether (three volumes) and chloroform (one volume). The ethereal solution was filtered into a weighed dish, evaporated, and the residue dried and weighed. In experiments 5 and 6 the final extraction was made with ether only, instead of a mixture of ether and chloroform. All the residues obtained by the Keller process were pale brown and resinous in appearance.

No. 1 Keller Residue (Purification).—The residue was dissolved in 5 c.c. of 95 per cent. alcohol and 1 c.c. of 1 per cent. hydrochloric acid added, and the mixture warmed to obtain complete solution. Five c.c. of distilled water and 1 c.c. more of 1 per cent. hydrochloric acid were added. The mixture became cloudy and was transferred to a separator with the addition of 2 or 3 c.c. of distilled water. The solution was then shaken with three successive portions of 10 c.c. each of chloroform. The chloroform was separated and the still cloudy liquid was shaken with ether. The cloud disappeared at once. The solution was shaken with two more portions of ether, and the ether solutions drawn off and mixed together. The chloroformic and ethereal solutions were evaporated separately in tared dishes and the residues dried to constant weight at 60°. Chloroform residue = 0.20. Ether residue = 0.03. The acid solution remaining was made alkaline with 5 c.c. of

solution of ammonia and shaken with 10 c.c. of chloroform. The solution became cloudy on the addition of the ammonia. The chloroform was separated and filtered into a tared dish, the aqueous liquid being shaken with three more portions of 5 c.c. each of chloroform. After separation of the chloroform the ammoniacal liquid was shaken with three successive quantities of 10 c.c. each of ether. The ether was separated, filtered into a weighed dish and allowed to evaporate. The dish and residue were dried at 60° C. to constant weight. Chloroform residue = 0.12 per cent. Ether residue = 0.03 per cent.

No. 2 Keller Residue (Purification).—In the case of this residue an attempt was made to titrate the alkaloid. The residue was warmed with a definite quantity of N/20 sulphuric acid and methyl red was added as an indicator. The liquid was then titrated with N/20 solution of sodium hydroxide, but the same amount of alkali was required as of acid used. The alkaloid apparently did not react under these conditions. Some brownish resinous material refused to dissolve in the acid, and this was filtered off. The neutralised liquid was transferred to a separator and 10 c.c. of N/20 sulphuric acid and 5 c.c. of chloroform added. After shaking and separation the chloroform was drawn off into another separator, and the acid liquid shaken with a further 5 c.c. of chloroform. The chloroformic solutions were mixed and shaken with 10 c.c. of N/20 sulphuric acid. The acid, after separation, was tested with Mayer's reagent. It gave no precipitate. This acid was, however, mixed with the original acid liquid, and the mixture made alkaline with ammonia after adding 10 c.c. of chloroform. A white cloud was formed. Ten c.c. of ether was, therefore, added to the liquid in the separator. The ether-chloroform was separated and the liquid was shaken with three more quantities of 15, 10, and 5 c.c. of ether-chloroform (3 vols. plus 1 vol.). The mixed ethereal liquids were filtered into a weighed dish and the solution evaporated and the residue dried at 60° to constant weight. Residue = 0.10 per cent.

No. 3 Keller Residue (Purification).—The third residue was treated with 5 c.c. of glacial acetic acid. It dissolved entirely. The solution was poured into 60 c.c. of distilled water. A faint cloud formed. This did not settle on standing, and the cloudy liquid was, therefore, introduced into a separator, 5 c.c. of chloroform added, and the mixture shaken. The cloud in the acid layer became more pronounced. The mixture was allowed to separate and 10 c.c. of ether was added. The ether-chloroform solution was drawn off and evaporated. To the cloudy solution remaining 20 c.c. of ether was added. The cloud disappeared and both the ethereal and acid layers became clear. The ethereal layer was separated and filtered into a weighed dish. The acid liquid in the separator was shaken with four more portions of ether which were separated, filtered into the dish and evaporated. A sixth portion of 20 c.c. of ether was now used, and it was separated and filtered into a separate dish and evaporated and weighed. It weighed only 0.0001 gm. The acid liquid was then made alkaline with ammonia and shaken with three successive quantities of 20 c.c. of ether. The ether was separated and evaporated after filtering in a weighed dish. Residue = 0.11 per cent.

No. 4 Keller Residue.—The residue was dissolved in 5 c.c. of glacial acetic acid. It dissolved entirely, and the solution was poured into distilled water and made up to 75 c.c. A cloudy solution resulted, and this was allowed to stand. It did not settle clear, so it was shaken with kieselguhr and filtered. The filtered liquid measured 68 c.c. This was placed in a separator and made alkaline with solution of ammonia. The alkaline liquid was shaken with 3×20 c.c. of ether. The ether was filtered into a weighed dish and evaporated. The residue was dried at 60° C. to constant weight. Residue = 0.14 per cent.

No. 5 Keller Residue.—The residue was dissolved in 5 c.c. of glacial acetic acid, poured into distilled water, and the volume made up to 60 c.c. A cloudy solution resulted. This was filtered through kieselguhr, and gave 50 c.c. of clear solution. The solution was made alkaline

with solution of ammonia and shaken with ether. The ether was filtered into a weighed dish and evaporated. The residue was dried at 60° C. to constant weight. Residue = 0.09 per cent.

No. 6 Keller Residue.—The residue was dissolved in 5 c.c. of glacial acetic acid, the solution poured into distilled water, and made up to 76 c.c. A cloudy solution resulted. This was allowed to stand overnight and then filtered through kieselguhr. 70 c.c. of clear liquid was obtained. This liquid was made alkaline with ammonia and extracted with ether. Residue = 0.09 per cent.

Attempts were made to prepare crystalline salts of the alkaloid, but they were unsuccessful, possibly owing to the small amount of alkaloid available. Results of these experiments show that the alkaloid occurs in a proportion of about 0.1 per cent. Neither the alkaloid, picrate, thiocyanate, nor hydrochloride was obtained in a crystalline condition. The purest form of the alkaloid appeared as a very pale yellow varnish. As there is still a quantity of material available, I am proceeding to extract the alkaloid in larger quantity, to purify it, and examine it more closely. I also have material for following the development of bark from very young twigs, and this examination is being proceeded with. My best thanks are due to Mr. Leechman for the supplying of the material for this work.

DISCUSSION

The CHAIRMAN said the Conference was to be congratulated on that paper. On looking at a specimen of the bark, one almost unconsciously compared it with the specimens at Bloomsbury Square, and noted the very considerable difference. In pre-war times there arose in the West End quite a demand for the solution of the alkaloid in oil for medical practice, but they found there was no British supply at all. It was found to be quite a satisfactory local anæsthetic for dental purposes. One felt that the bark was one of the raw products which went to Germany exclusively for manufacture. So far as one could judge, the commercial supplies came from the German African colonies. No other manufacturer had a chance of getting the raw materials, as they all went to Germany to be worked up. When the war broke out, several large cargoes of the bark were captured, which were looked upon as something rather mysterious until investigations took place and results were obtained. Accordingly that paper was an attempt at upsetting that monopoly. If it was a successful alkaloid, they ought to make it in this country and get the fullest possible information.

MR. A. W. GERRARD congratulated the author upon the excellent work he had done, and on giving the whole of his work in detail. It was a very attractive subject, and the results would quickly repay anyone who took any trouble with it. Furthermore, it was an educative work which was a splendid lesson to them. Some thirty years ago he (the speaker) was able to get various specimens of the bark, but was dissatisfied with his experiments, because the results varied so much. He did, however, get a few results similar to those now produced. He was lucky to have Professor Sidney Ringer with him in his experiments, and the Professor gave attention to the therapeutic side of the subject, but as the total results were not entirely successful, they did not publish them.

MR. FINNEMORE said that the paper was merely a preliminary announcement, and he hoped steps would be taken to get larger supplies of the raw material—say, 5 cwt. In his opinion, too much attention was inclined to be given to preliminary results, not only at Bloomsbury Square but elsewhere. When they remembered the large amount of intractable gum in the bark, it would be seen how necessary it was to get larger supplies in order to get results of definite scientific value.

PROFESSOR GREENISH said it was well known that the Germans were very keen in establishing institutes in their colonies for dealing with various barks. Mr. Leechman had sent him a few pounds of the bark, and some good investigation had been possible. He did not see any reason why, if the alkaloids were valuable, the cultivation of that tree should not be proceeded with in the

British experimental stations in East Africa. One of the principal points in the paper was that the young bark contained a larger quantity of alkaloid than with the old scaly bark from which the original commercial drug was made.

The next paper was:—

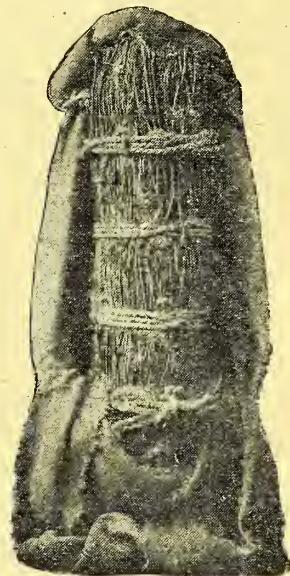
Manchurian Liquorice Root

By IBRAHIM RAGAB FAHMY

[ABSTRACT]

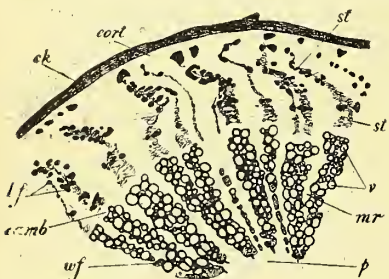
THE drug examined was a specimen of liquorice root grown in Southern Manchuria shipped from Newchang, and supplied in January last by Messrs. Potter & Clarke to Professor Greenish. Bretschneider, quoting from Chinese sources, states that the liquorice plant grows in the river valley of Ho si (west of the Yellow River) and in Shen si and Sz ch'uan, the best with red rind coming from Kukanor. The hard and solid root, three to four feet long, with horizontal branches from its upper portion. After removal of the crown and red rind it is dried in the sun. Specimens sent in 1882 to Dr. Fluckiger were stated in his "Pharmakognosie" to be indistinguishable from best Spanish liquorice (2nd ed., p. 365). An inferior quality is produced in East Shantung, and there is also more slender purple or violet liquorice. F. Porter Smith gives *Glycyrrhiza echinata* and *G. glabra* as the source of the Chinese drug which Tschirch refers to *G. uralensis*, Fisch. growing in Siberia, Ural, Turkestan, Mongolia, and Tibet. S. G. Kowalajew also ascribed Asiatic liquorice or "chuntschir" to *G. uralensis*, and considered it as regards extractive and glycyrrhizic acid better than Spanish and only slightly inferior to Russian liquorice, the extract itself being more transparent. A characteristic pharmacognostical peculiarity of "chuntschir" is the curved course of the medullary rays. Palabin states old roots attain 2 cm. in thickness, but in commerce the roots are 0.5 to 1 cm. in diameter. The taste is very sweet, with a slight after-paste. Iljin, who found in root from *G. uralensis* 24.85 per cent. extractive containing 5.6 per cent. glycyrrhizic acid, considers Asiatic root not inferior to best varieties of liquorice. Of the various species recorded as growing in China there remains as possible sources of Manchurian liquorice, *G. echinata*, Linn., *G. pallidiflora*, Maxim., *G. paucifoliolata*, Hance, *G. squamulosa*, Franch., and *G. uralensis*, Fisch. The structure and other characters has led the author to believe that the Manchurian liquorice was identical with chuntschir of Kowalejew (*G. uralensis*, Fisch.), who does not adduce any definite evidence, however, apparently relying on the statement of Palabin. It is possible, therefore, that this plant is the source of Manchurian liquorice, but it is also possible that it may be derived from *G. pallidiflora*, Maxim., which grows in the Amur region, a fact which would be consistent with its export from Manchuria.

Manchurian liquorice arrived in bales about 1.5 metres long and 0.5 metre wide, weighing about 1½ cwt., bound with grass ropes, and packed in sacking. The outer part of the bale examined consisted of long roots; within were smaller bundles of shorter roots. The long pieces were about 1 metre long and about 1 to 2 cm. in diameter, with a knotty crown; they showed no

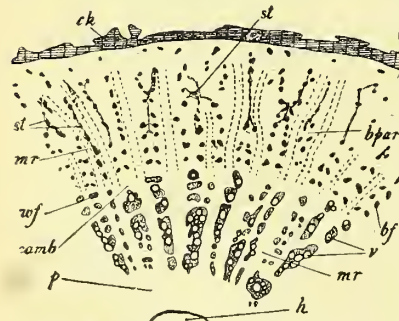


ORIGINAL PACKAGE OF MANCHURIAN LIQUORICE

buds and contained no pith, and may therefore be considered to be long, descending roots. The smaller bundles were composed of pieces about 30 cm. long and from about 0.2 to 0.5 cm. wide. These showed buds on the surface and a distinct pith in the centre of the transverse section, showing that they were runners. The colour is a rather pale chocolate-brown, both roots and runners being unpeeled. The larger pieces exhibit distinct transverse cracks (? lenticels) sometimes more than half encircling the root. It is easily cut. The transverse section shows a well-marked radial structure with radial fissures due to the breaking down of the parenchymatous tissue. A longitudinal section shows conspicuous, axially elongated fissures. The colour in the interior varies from yellowish-brown to pale yellow. The cork exfoliates easily in thin plates. The taste is very sweet and free from bitterness. The runners are similar, but show no transverse furrows, and the cork does not readily exfoliate. A transverse section of the rhizome exhibits a cork layer consisting of about ten rows of



SECTION OF RUNNER OF CHINESE LIQUORICE
bf, bast fibres; cmb, cambium; ck, cork;
cort, cortex; mr, medullary ray; p, pith; v,
vessels; wf, wood fibres



SECTION OF RUNNER OF SPANISH LIQUORICE

tangentially elongated cells with reddish-brown contents. Within the cork are one or two rows of phelloderm cells. The bast ring which follows is about equal in thickness to the radius of the wood; it is traversed by medullary rays about four cells wide, which curve round or become wavy, and thus impart a very characteristic aspect to this part of the section. In the secondary bast there are numerous rounded or oval groups of bast fibres; these fibres have very thick walls, the lumen being usually punctiform; in the parenchymatous cells abutting on them prismatic crystals of calcium oxalate are often to be seen, and similar crystals also occur in the bast parenchyma; in the secondary bast many irregular strands of collapsed sieve tissue are to be seen. In the parenchymatous cells there are abundant small rounded or oval starch grains. The wood bundles contain numerous large vessels with yellow walls, groups of wood fibres, wood parenchyma, and small tracheids. The root has a very similar structure, but the width of the secondary bast is about one and a-half times the radius of the wood, the groups of bast fibres are more numerous and the strands of collapsed sieve tissue more slender; the wood bundles are also narrower than they are in the rhizome. These characters are readily seen in the accompanying illustrations, a sketch of Spanish liquorice in section being added for comparison. Determinations were made of the moisture, ash, glycyrrhizic acid, gummy matter, and aqueous extractive. The specimen of Manchurian liquorice moisture was 8.22 per cent., ash 5.94 per cent., and aqueous extract by B.P. method 21.71 per cent. The glycyrrhizic acid in this extract determined by Parry's method, with slight modification, was equivalent to 6.48

per cent. The drug did not contain more than traces of sucrose or reducing sugars.

Manchurian liquorice differs from Spanish and Russian in the following particulars: The cork is of a pale chocolate-brown colour and exfoliates readily; the drug is easier to cut, is more fibrous, and shows lacunae, particularly in the longitudinal section, due to the breaking down of the medullary rays. In the transverse section the secondary bast is thicker in proportion to the wood than in the Spanish or Russian, and the medullary rays take a very conspicuous, curved, or wavy course. In the wood the vessels are more numerous and the groups of sclerenchymatous fibres less numerous than they are in the Spanish or Russian drug.

Manchurian liquorice comes within the limits of the British Pharmacopœia as far as the percentage of aqueous extract and ash are concerned, but is excluded by the fact that it is unpeeled.

DISCUSSION

The CHAIRMAN, in opening the discussion, said that this root was new to him. It was of great interest to investigate these species.

PROFESSOR GREENISH emphasised the authors' acknowledgment of Messrs. Potter & Clarke's initiative in forwarding the root. The research laboratory at Bloomsbury Square, added the Professor, was constantly indebted to wholesale houses for sending unusual drugs. He would like the Society's Museum to be complete in that respect.

MR. SAGE related a personal experience of having obtained, some years ago, liquorice root from a province of China. No more was forthcoming, and the question arose whether in such cases one could be sure of further supplies. Pharmacy had no knowledge of the quantities of liquorice sent into commerce: factories professed to make all grades of liquorice, and it was high time that someone began to investigate.

The CHAIRMAN cordially thanked the author, on behalf of the section, for his paper.

The next paper was:—

An Investigation of Colchicum and its Galenicals

By JAMES GRIER, M.Sc.

[ABSTRACT]

THE alkaloid colchicine, $C_{22}H_{25}NO_6$, is not a typical alkaloid, as it does not contain a basic nitrogen atom, but an amido-acetic grouping, and therefore does not form true salts with acids, while with alkalis it forms dyelike or resinous compounds, which are difficult to resolve on shaking with chloroform. It is also soluble in water, and can be extracted perfectly from acid solutions with chloroform. Hence the usual assay processes by means of immiscible solvents are not satisfactory when applied to this alkaloid, and methods based on this principle are misleading and do not yield pure products. E. C. Davies (1921) found that phospho-tungstic acid gave as pure an alkaloidal residue as silico-tungstic acid, and he also worked out the conditions for perfect precipitation and isolation of the colchicine in a state of purity (*vide* Year-Books, 1921 and 1922). A very satisfactory assay process was devised, and it has been applied successfully to the quantitative determination of colchicine in the seeds and corn, and in the galenical preparations of these drugs. A table of the results of different investigators and of the requirements of various authorities is appended:—

Corn.—Schultze, 1904, 0.6 per cent. colchicine. Parke, Davis & Co., 0.3 to 0.75 per cent. U.S.P. (VIII.), 1905, and U.S.P. (IX.), 1916, 0.35 per cent. B.P.C., 1907 and 1911, and Greenish's "Mat. Med.," 0.5 to 0.6 per cent. Evans' "Annual Reports," 1908, 0.56 per cent.; 1909, 0.72 per cent., 0.76 per cent.; 1911, 0.25 per cent.; 1913, 0.28 per cent. "U.S. Dispensatory," 1918, 0.4 per cent. in good specimens. Davies, 1921, 0.38 per cent., 0.4 per cent.

Seeds.—Schultze, 0.9 per cent. Blau, 1903, 0.377 per cent., 0.504 per cent. Parke, Davis & Co., 0.32 per cent. to 0.8 per cent. U.S.P. (VIII.), 0.55 per cent.; U.S.P. (IX.), 0.45 per cent. B.P.C., 1907, 0.7 per cent. B.P.C.,

1911, 0.2 to 0.8 per cent. Farr and Wright, 1911, 0.54 per cent., 0.79 per cent. Evans' Reports, 1913, 0.8 per cent. Grimme, 1920, 0.11 per cent. to 0.52 per cent. Davies, 1921, 0.72 per cent., 0.75 per cent.

The seeds also yielded to Davies 8.9 per cent. of a green fixed oil and 3.62 per cent. ash; the corms, 2.4 per cent. ash. The U.S.P. (IX.) requires not more than 8 per cent. ash from the seeds and not more than 6 per cent. from the corms. The author, after describing the work of previous investigators, passed on to a consideration of the galenical preparations. In the extraction of the powdered drug by percolation with alcohol, 45 or 50 per cent. gives perfect exhaustion, but it also extracts albuminous matters giving a thick brown liquid. For this reason 70 per cent. alcohol, which gives a thinner, less impure liquid, was used in the assay of the corms and seeds, and is that now used in the B.P. 1914 in the preparation of the tincture; but it does not follow that the 45 per cent. alcoholic tincture was less stable than the 70 per cent., as the colloidal matters would seem to entangle and preserve the alkaloid, apart from the preservative action of the alcohol. In the language of hydrogen-ion concentration, albumins, proteins, peptones, and amino acids in general are good "buffers," and prevent or retard the hydrolysis of plant principles. This is a point to be borne in mind in favour of galenicals as opposed to solutions of isolated active principles.

In the assay of the tincture prepared with 70 per cent. alcohol, it is sufficient to evaporate 30 c.c. on the water bath and dissolve the residue in three successive portions of water of 20 c.c. each; but in the assay of the wine 70 c.c. of 90 per cent. alcohol are to be added to 30 c.c. of wine in order to precipitate albuminous matters, and 80 c.c. of the filtrate (equal to 24 c.c. of the wine) are then evaporated to low bulk to get rid of alcohol and diluted with water to 100 c.c. In the estimation of the extracts, 5 gm. are dissolved with heat in 20 c.c. water and made up to 100 c.c. with 90 per cent. alcohol, giving roughly 70 per cent. alcohol, filtered from the precipitated albumen, and 80 c.c. of the filtrate (equal to 4 gm. of the extract) taken for the assay, the liquid evaporated and the residue taken up as far as possible with three portions of water.

A freshly prepared *Tincture*, B.P. 1914, 1 in 10, made by percolation with 70 per cent. alcohol from assayed seed (0.7 per cent. colchicine) yielded 0.069 per cent., indicating perfect extraction. Commercial tinctures gave 0.0683 per cent. and 0.072 per cent. respectively. The U.S.P. (IX.) tincture 1 in 10 from seeds is standardised to contain 0.04 per cent. colchicine, dose 30 mins.; dose of B.P. 1 in 10 tincture, 15 mins. An old tincture (D), 1898 B.P., 1 in 5, with 45 per cent. alcohol, dose 15 mins., yielded 0.0442 per cent. (average of two estimations), and must have been twenty years old.

Colchicum wine, B.P. 1914, 1 in 5, made by maceration from assayed dried corm (0.4 per cent. colchicine) with 14 per cent. alcohol in the form of sherry wine, yielded 0.064 per cent. colchicine, and therefore contained 80 per cent. of the total alkaloids of the corm. A wine made with plain 14 per cent. alcohol instead of sherry wine gave a similar result. A commercial wine gave 0.0702 per cent. and 0.0695 per cent. A comparison of the strengths and doses of the B.P. wine and tincture is interesting, wine 1 in 5 containing 0.064 per cent. colchicine, dose 30 mins., tincture 1 in 10 containing 0.069 per cent. colchicine, dose 15 mins., that is to say, the tincture is the same strength as the wine with half the dose, and it is half the strength of the 1898 B.P. tincture with the same dose. In the wine the colchicine exists as tannate, along with the colloidal constituents of the original drug, but probably not with the resinous and fatty constituents. The tannate of colchicine is soluble in 10 per cent. alcohol, and therefore does not precipitate in the wine; it is also soluble in hot water, but precipitates on cooling. As colchicine in watery solution decomposes gradually and loses strength and activity in one month, one would expect a weak alcoholic solution such as the wine to alter on keeping, but the wine retains its strength fairly well, a result which may be partly due to the effect of the colloidal substances present

in this typical galenical. An examination of wines of various ages which were kindly sent by pharmacist friends gave the following results. Each result is the average of two estimations, and the capital letters appended indicate the names of the senders:—

		Age in years	Colchicine percentage
Vinum colchici	.. .. (H)	4	0.0654
" "	.. rad. (H)	15	0.0660
" "	.. sem. (H)	20	0.0689
" "	.. sem. (C)	15	0.0575
" "	.. .. (N)	9	0.0810
" "	.. sem. (D)	20	0.033

Two wines are given in the National Formulary of the American Pharmaceutical Association, one made from the U.S.P. fluid extract of the seeds, 1 in 10, dose 30 mins.; the other from the dried corm, 1 in 2½, dose 10 mins. The latter corresponds in strength, though not in dose, to the wines of the old P. Lond. and P. Edin. It is stated in the U.S. "Dispensatory" (1918) that in Great Britain a preparation called "Preserved Juice of Colchicum" is given in doses of 5 mins. or more, but the only reference found to this is in Pereira (1850), Vol. II., f. 1057. The yield of juice from fresh corm is given as 36.4 per cent. It becomes darker coloured on exposure to air. After standing forty-eight hours, spirit is added when a large quantity of feculent matter deposits and the liquor acquires a paler hue. The B.P. 1914 *Extract* is an inspissated juice, and extracts from such juices, according to Farr and Wright (1898), are overloaded with inert matters, and are thereby rendered weak and less active; also the expressed juice is relatively deficient in active principles. According to "Squire," the expressed juice from 100 lb. of fresh corms yields 5 lb. of acetic extract, representing by calculation some 45 per cent. only of the total colchicine of the original corm. For these reasons Farr and Wright indicated their preference for extracts made from dried drugs by alcoholic extraction and subsequent evaporation. Such is the U.S.P. (IX.) *Extract* from dried corm, 4 in 1, containing 1.4 per cent. colchicine. The author then goes on to examine in the same way the B.P. extracts, and concludes that colchicine is fairly stable when kept in extract form. A sample of *Acetum colchici* (C) estimated to be at least forty years old gave, on shaking out with chloroform alone and then precipitating with phosphotungstic acid, 0.102 per cent. colchicine, but when shaken out with chloroform and ammonia to neutralise the acetic acid, 0.0406 per cent., a result so high as to be meaningless. Colchicum is still given in gout with magnesium sulphate. Such is the *Mistura Colchici*, B.P.C., which seems to be a combination of the two hospital formulas given in "Squire," but one finds the U.S.P. fluid extract figuring in the *Formulary Mixture of the Manchester Medical (and Panel) Committee*. Appended are both formulas:—

MIST. COLCHICI, B.P.C.		MIST. COLCHICI, MANCHESTER FORMULARY	
Vini colchici	.. ℥ xv.	Ext. colchici sem. liq.,	
Magnes. carb.	.. gr. x.	U.S.P. ..	℥ iv.
Magnes. sulph.	.. gr. xv.	Potass. bicarb.	.. gr. xx.
Aque menth., pip. ad	3j.	Ol. limonis ..	℥ ½
		Aquam ..	ad 3ss.

The U.S.P. fluid extract contains 0.4 per cent. colchicine, and taking the wine as containing 0.064 per cent., it will be seen that there is 0.009 grain colchicine in one fluid ounce of the B.P.C. *Mistura* and 0.03 grain colchicine in one fluid ounce of the other. To make them correspond in strength, 50 mins. of the wine, i.e., seven times as much, would be required in each tablespoonful dose of the B.P.C. *Mistura*, so that we have come round in the end to the larger dosage of Pereira. The U.S.P. (IX.) fluid extract, 1 in 1, from the seeds, standardised to contain 0.4 per cent. colchicine, dose 3 mins., is made by percolation, first with petroleum benzin to remove oil, and then with 63 per cent. alcohol, with evaporation of the weaker percolates. A com-

mercial example on assay gave 0.326 per cent. It is now suggested for U.S.P. (X.) that the fluid extract be made by direct percolation, as the application of heat to the extra percolate is liable to decompose the colchicine. In view of this it is, rather singular that in the proposed amendments for tinctures for Ph. G. (V.) tincture of colchicum is to be made by a general process, which consists in first treating the seeds with $2\frac{1}{2}$ to 5 parts of boiling water and shaking frequently while cooling down to 40° C. In preparing colchicum pharmaceutically, if it be desired to retain the colchicine unchanged, both acids and alkalis should be avoided, and, as far as possible, heat. From the author's own observations heat is harmful only in presence of acids and alkalis, with the exception of acetic acid.

This research was carried out in the laboratories of the Pharmaceutical Department, Manchester University, and the writer's thanks are due in the first instance to Mr. E. C. Davies, M.Sc., M.P.S., for the earlier experimental work, and to Miss Hilda Crosfield, B.Sc., M.P.S., for the later assays; also to those pharmacists who sent samples of galenicals for investigation.

DISCUSSION

The CHAIRMAN said that was a very extensive paper on a drug which was becoming little used. Mr. Grier's assumption that there was no gout was hardly justified. His view was that colchicum was losing its sanctity for the treatment of gout, and that, in fact, gout was more prevalent than generally believed. If colchicum was the best for the purpose, however, they wanted to extract as much of it as possible from the raw material in a form which was easy to use.

MR. FORSTER (Seaham) said that colchicum was coming into extensive use in the district from which he came, especially because it was used by every panel committee.

MR. FINNEMORE said the bibliography of the subject was sketched over in rather a provocative way in the paper. He would also like to know definitely whether tannin was proved to be present in colchicum.

MR. FARR congratulated Mr. Grier upon the thoroughness of his paper. He had, however, one criticism to make, that precipitation of colchicum did not always produce a yellowish-brown substance. He had conducted experiments, and always obtained a product of a very pale straw colour with no indication of brownness whatever. Naturally, the extractive of the seed was less, while in powdered form they found that considerable preparation was necessary. In some of the preparations from the Continent it would be found that many extraneous matters were present. Perhaps it arose owing to the gathering of the drugs or the extraction at the wrong time. Mr. Wright and himself found that the preparation of the dry corm was better than that made from the fresh corm. The same thing applied to a number of other drugs.

Replying, MR. GRIER indicated where papers dealing with colchicum were printed. Tannin was discovered by experiment. He was interested to hear about the yellowish appearance. Mr. Farr's method was a development in precipitation. They examined a sample of Merck's pure colchicine, and the residue was of a pale yellow colour.

The next paper was :—

The Activity of Pharmacopœial Preparations of Ergot

By A. J. CLARK and W. A. BROOM

[ABSTRACT]

THE lack of a generally accepted method for the standardisation of ergot has been a serious handicap to the study of the actions of this drug. Unfortunately, ergot contains a large number of pharmacologically active substances, and there is no general agreement as to which of these is the most important. Clinical evidence gives little help in this matter, for clinicians appear to be equally satisfied with the most varied assortment of ergot preparations, and many of the preparations in clinical use appear from pharmacological tests to be almost completely inert. The active constituents of ergot

consist of the specific alkaloids ergotoxine and ergotamine, and a group of amines, which latter bodies can be obtained from many other sources. Ergotoxine and ergotamine have slightly different chemical formulæ, but have an identical pharmacological action (Spiro and Dale). These alkaloids first stimulate and then paralyse the motor sympathetic endings. In consequence they cause a rise of blood pressure and contraction of the uterus when first administered to an animal, but subsequent administration produces no response. The non-specific amines produce various actions on the uterus and blood pressure. Histamine produces a profound fall of blood pressure, but causes contraction of the uterus. Acetyl-choline produces a fall in blood pressure and causes contraction of the uterus. A very important point of difference between the ergot amines and alkaloids is that although they all produce very powerful pharmacological effects when injected, yet the amines produce little or no effect when taken by mouth, whereas the alkaloids are active when taken by the mouth. This fact indicates that probably the alkaloids are the important constituents of ergot, for this drug is usually given by the mouth. Furthermore, if the alkaloids are not the important constituents of ergot, there is no justification in retaining ergot in the Pharmacopœia, for the amines can be obtained from many other cheaper sources. The obvious method for standardising ergot appears to be the measurement of its action on the uterus, as this is the organ upon which its therapeutic effect is exerted. Unfortunately, the estimation of the action of ergot on the uterus measures chiefly the actions of the amines contained in it. The two uterine methods which have been recommended are as follows :—

(1) *The Action on the Cat's Uterus in situ.*—A cat is anaesthetised and the movements of its uterus recorded, and the effect of intravenous injection of an ergot preparation is observed. It is impossible to get quantitative measurements by this means.

(2) *The Isolated Uterus of the Cat or Guinea Pig.*—A uterus is excised and suspended in Ringer's fluid, and a determination is made of the lowest concentration of an ergot preparation which will give a certain degree of contraction. Accurate quantitative results can be obtained by this method; but, unfortunately, our experiments have convinced us that this method measures almost entirely the amine content of the ergot, and is therefore open to the same objections as the last-mentioned method.

Other methods of ergot standardisation have been devised which measure chiefly the alkaloidal content of the ergot.

(1) *The Cock's Comb Method.*—The hypodermic injection of ergot into a Leghorn cockerel causes in about one hour bluing of the comb. This action is due to the ergot alkaloids. This is the oldest method of ergot standardisation, and is the method chiefly used in America (Edmunds and Hale; Hamilton). The objections to the method are that different cocks vary in susceptibility, and that repeated doses of ergot increase the susceptibility of the animals, hence it can only be carried out successfully if a considerable number of animals of the same age are kept.

(2) *The Cat's Blood Pressure Method.*—In this method the rise of blood pressure produced in an anaesthetised or pithed cat by the intravenous injection of an ergot preparation is measured. This measures chiefly the alkaloidal content of the ergot, but the amines present interfere with the reaction for histamine and acetylcholine cause a fall of blood pressure, while tyramine causes a rise. A variation of this method is to determine the dose of ergot which is required to produce reversal of the normal adrenalin reaction. Adrenalin normally produces a rise of blood pressure, but after a sufficient dose of ergot alkaloids has been given adrenalin produces a fall of blood pressure. The objection to this method is that only one preparation can be tested on one cat, and cats show a certain amount of individual variation in susceptibility. The method, however, measures only the alkaloidal content of the ergot.

(3) *The Rabbit's Uterus Method.*—The writers have introduced a method which measures only the ergot alkaloids.

loids, and have found it more convenient than any of the methods already described. Adrenalin normally produces contraction of the isolated rabbit's uterus, but after a sufficient dose of ergot alkaloids it produces either no effect or else inhibition. A rabbit's uterus after excision can be kept on ice for more than a day without losing its activity, and, as a strip only one centimetre long is required for an experiment, about twenty experiments can be done on one uterus. The details of the technique are being published elsewhere. The uteri of different animals vary slightly, but a solution of ergotamine can be used as a standard, and the activity of the preparations tested can be standardised against solution of ergotamine, and thus errors due to individual variation can be eliminated. The strengths of solutions which produced this reversal effect were roughly as follows:—Ergotamine, 1 in 4 million; ergotoxine, 1 in 2 million; liquid extract of ergot, U.S.P. IX., 1 in 3,000; liquid extract of ergot, B.P. 1914, no action, 1 in 100. Using this method, we found it possible to estimate fairly rapidly the activities of samples of ergot even when these varied very widely; with the other methods this was a very long and tedious business, unless one knew beforehand the approximate strength of the preparation. The method was found particularly convenient when it was desired to prove the complete absence of ergot alkaloids in preparations, for the toxic action of the ergot amines makes it impossible to inject large quantities of ergot preparations into cats and cocks. Carr and Dale pointed out ten years ago that the B.P. methods of preparing ergot were such as to ensure the absence from the preparations of the alkaloids, which are the most important principles contained in the drug. The method described above offered a good means of testing this point directly, and we have made a series of comparisons between various preparations which have been made by The British Drug Houses, Ltd., in accordance with the following official processes and modifications of official processes as described hereunder. Each preparation has been made in duplicate, using selected samples of (a) Spanish ergot, (b) Russian ergot.

(1) FLUIDEXTRACTUM ERGOTÆ, U.S.P. IX.—The ergot is macerated with a small quantity of 49 per cent. alcohol acidified with hydrochloric acid, and is then percolated with a further quantity of the same menstruum; 20 mls of hydrochloric acid to 1 kilo of ergot is used. Exhaustion of the drug is effected by subsequent percolation with 49 per cent. alcohol. The first portion of the percolate is reserved; the last portion is evaporated at a low temperature, and the residue is dissolved in the first portion.

(2) EXTRACTUM ERGOTÆ LIQUIDUM, B.P. 1914.—The ergot is extracted by maceration in two successive quantities of water. The liquors are strained and pressed from the marc, then evaporated to a definite bulk, mixed with alcohol, and finally filtered.

(3) EXTRACTUM ERGOTÆ LIQUIDUM, B.P. 1914 (Modified).—The B.P. method was followed, but the ergot was allowed to stand in contact with the first quantity of water for two weeks at an average temperature of 45° C. to ensure active fermentation.

(4) EXTRACTUM ERGOTÆ LIQUIDUM (FRENCH CODEX).—The ergot is macerated in water, acidified with tartaric acid, and is subsequently percolated with water. One gram of tartaric acid to 1 kilo of ergot is used. The whole of the percolate is evaporated on a water-bath to a definite bulk, neutralised with calcium carbonate, then mixed with 95 per cent. alcohol, and, after standing, is filtered. The alcohol is evaporated off, cherry laurel water is added, and sufficient distilled water to produce the required volume.

Liquid extracts were also made by modifications of the U.S.P. process. The ergot was extracted (1) with tartaric acid and alcohol; (2) with phosphoric acid and alcohol; and (3) the ergot was first defatted with benzene and then extracted with tartaric acid and alcohol. None of these methods, however, produced preparations superior to that produced by the U.S.P. method. Extractum secalis cornuti fluidum (*Deutsches Arzneibuch*) resembles the U.S.P. preparation, as the extraction is

performed with 20 per cent. alcohol acidified with hydrochloric acid. The results obtained with the rabbit's uterus method of standardisation are shown in the table.

	Relative content of ergot alkaloids	Relative activity as measured by guinea pig's uterus
(I) LIQUID EXTRACT OF ERGOT		
A. Spanish ergot—		
i. U.S.P. method	100	100
ii. B.P. method	< 3	25
iii. B.P. method (ergot allowed to ferment)	12	50
iv. French Codex method	< 2	20
B. Russian ergot—		
i. U.S.P. method	60	66
ii. B.P. method	3	50
iii. B.P. method (ergot allowed to ferment)	20	66
iv. French Codex method	< 3	30
C. Other samples of ergot—		
i. B.P. method (7)	< 3	60
ii. B.P. method (8)	< 6	200
iii. B.P. method (9)	< 6	100
(II) OTHER PREPARATIONS OF ERGOT		
(1) Ammoniated tincture of ergot, B.P.—		
i. Spanish ergot	10	100
ii. Another sample	10	—
(2) Infusion of ergot, B.P.—		
Spanish ergot	< 0.6	20
(3) Solid extract of ergot—		
Spanish ergot	30	1,000

The results shown in the table were confirmed by standardisation upon the cock's comb, but this method did not allow such accurate measurement of minute quantities of ergot alkaloids. The table shows that the isolated uterus of the guinea pig gave entirely different results to those obtained by the rabbit's uterus method. This was undoubtedly due to the B.P. preparation containing considerable quantities of amines, and to the guinea pig's uterus method measuring chiefly the amine content of the ergot. The relative activities of the U.S.P. and B.P. preparations of the Spanish ergot were also tested on pithed cats. When tested by their action in raising blood pressure, or by their effect in producing adrenalin reversal, the U.S.P. preparation was found to be at least eight times as strong as the B.P. preparation; but here again the toxic action of the amines present prevented the administration of larger quantities of the B.P. preparation. As regards uterine effect in the cat, the U.S.P. preparation was found to be about four times as strong as the B.P. preparation. The cock's comb method, the adrenalin reversal method, and the rabbit's uterus method all indicated that the alkaloidal content of the Fluidextractum Ergotæ, U.S.P., prepared from the specimen of Spanish ergot corresponded to about 0.07 per cent. of ergotamine. This is a low figure, but the time of year (spring) was unfavourable for obtaining an ergot of full activity. The writers are indebted to The British Drug Houses, Ltd., for taking much trouble in selecting typical specimens of Spanish ergot and Russian ergot, and in preparing the series of preparations used during this investigation; also for originating the modifications in the B.P. and U.S.P. methods of preparing the liquid extracts as described in the paper. The writers further desire to express their thanks to The Sandoz Chemical Company, Ltd., for supplying the ergotamine, which has been used as a standard.

CONCLUSIONS

(1) The methods of standardising ergot preparations upon the isolated uterus or upon the cat's uterus *in situ* measure chiefly the amine content of the ergot preparation.

(2) The action of ergot preparations in reversing the action of adrenalin upon the isolated rabbit's uterus can be made the basis of a convenient method of standardising ergot preparations. The method measures only the content in ergot alkaloids, and very small quantities of these can be detected. The results obtained agree with the results obtained by the cock's comb method and the cat's blood pressure method.

(3) The instructions of the British Pharmacopœia, if

followed exactly, result in preparations almost completely devoid of ergot alkaloids, although from the same samples of ergot the U.S.P. method extracts considerable quantities of ergot alkaloids. The B.P. method can, however, be modified so that a certain proportion of the ergot alkaloids are obtained.

(4) Since the ergot alkaloids are the only known active principles of ergot that are specific to ergot, the methods of preparation laid down in the B.P. appear to be frankly absurd.

DISCUSSION

The CHAIRMAN considered that this was a paper of supreme importance, and it seemed that comment was called for from the point of view of formulas being included in the British Pharmacopœia which were quite useless. It appeared to be astonishing that a drug of this kind should be in its present condition of uncertainty. There might be a confusion in the medical mind between the *post hoc* and the *propter hoc*. He was glad to see emphasis laid on the frequent absurdity of giving drugs by mouth when their activity was thus destroyed. Post-pituitary solution might be better than ergot; a stable and standardised solution should be possible which should be of greater certainty.

MR. F. H. CARR remarked that he was delighted to have the results of Dr. Dale and himself confirmed after ten years. The ingenious method of Professor Clark and Mr. Broom represented a distinct advance in physiological testing. In spite of the publication, prior to the B.P. of 1914 of certain results, we had to-day the state of affairs that the preparation of the B.P. was inactive and that of the U.S.P. active. It put the B.P. at a disadvantage all over the world. Probably ergot preparations administered by mouth would fill a useful place, in spite of all that pituitary might do.

MR. DEANE pointed out that aqueous solutions of ergot are always strongly acid; so one would imagine that the B.P. method would get out the alkaloids to some extent. Fermentation for a few hours was sufficient in warm weather.

MR. R. R. BENNETT remarked that thanks were due to Professor Clark and Mr. Broom. As pharmacists and chemists, we knew that ergot had, to a large extent, defied attempts to standardise it chemically: a good physiological test was necessary. It appeared to have been proved beyond all doubt that the B.P. preparation was unsatisfactory, and that of the U.S.P. the best. It had been suggested that ergot preparations should be dated.

MR. SAGE inquired why, if good results could be obtained with pituitary, we should bother about ergot? Pharmacists ought to be able to show the latest chemical results to pharmacologists, and then, with them, to go to the body that prescribes what shall go into the B.P.

MR. HAMPSHIRE pointed out that increase in strength or ergot extracts had been ascribed to the development of acid. It was possible that decomposition of the proteins contributed to the process set up by fermentation.

MR. BROOM, in reply, said that if clinicians wanted amines there was no need to go to ergot for them. Pituitary preparations were outside the scope of the paper.

The CHAIRMAN, in thanking the authors, congratulated them on the work they were doing.

The next paper was:—

Formation of Quinotoxin on Sterilisation of Acid Quinine Solutions

By BERNARD F. HOWARD, F.I.C., and OLIVER CHICK, A.I.C.

[ABSTRACT]

THE authors in 1917 pointed out that solutions of the bisulphates of the cinchona alkaloids are unsuitable for hypodermic injection owing to at least 5 per cent. of the alkaloid being decomposed on sterilisation for thirty minutes at 115° to 120° C. The bihydrochloride and bihydromide of quinine, which shows no appreciable change under like conditions, was recommended for use instead. Ganassini (Boll. Chim. Farmaceutico, 1922, p. 6) drew attention to the toxic symptoms occasionally following small doses of quinine, probably due to quinotoxin (quinicine). He developed two qualitative colour reactions for quinotoxin which, however, is too sensitive to be of real value, as not any commercial acid salt of quinine will give a totally negative result. The authors, therefore, decided to carry out a quantitative investigation into the decomposition of quinine and include in the examination also acid solutions of quinidine, cinchonidine, and cinchonine. The fact that there is a big difference between the polarimetric rotations of these four alkaloids and of their respective decomposition products (quinicine and cinchonine) affords through the polarimeter a ready and accurate means for estimating the amount of decomposition on sterilisation. Concentrated solutions of the commercial bihydrochlorides and bisulphates of the four principal cinchona alkaloids were, therefore, made up and heated in an autoclave at 20 lb. (=126° C.) and 40 lb. (=141° C.) pressure for two and four hours at each pressure. The readings were made in a 2-decimetre tube at 18° C., the heated solution being made up to its original weight with distilled water.

It was found that by prolonging the heating of the bisulphate solutions beyond four hours at 40-lb. pressure no further change was produced in the polarimeter reading (except in quinine bisulphate, which darkened), and it was, therefore, taken that complete conversion had occurred. An inspection of the tabulated results makes it clear that there is a great difference between the effect of heat on these two classes of cinchona salts. The bisulphates undergo rapid conversion to quinicine or cinchonine, whilst the change in the bihydrochloride solutions is practically negligible, even in much more concentrated solutions. The points to be noted are that the quinine and quinidine salts of both classes are much more stable than the corresponding cinchonine and cinchonidine salts; and that the decomposition goes on regularly with the time of heating until it is complete. From these results it is evident that solutions of the bisulphate of the cinchona alkaloids are quite unsuitable to be put up in ampoules for hypodermic use. On the other hand, as it is usual to sterilise ampoules at 20-lb. pressure for half an hour only, the amount of decomposition taking place in the bihydrochloride solutions is practically negligible, as even in the worst case—that of cinchonidine bihydrochloride—it amounts to less than 0.3 per cent. It is not clear from the evidence available whether quinicine and cinchonine are poisonous

Salt	Strength of Solution per cent.	Original polarimetric reading	After heating two hours at 20 lbs.	Per cent. decomposition	After heating four hours at 20 lbs.	Per cent. decomposition	After heating two hours at 40 lbs.	Per cent. decomposition	After heating four hours at 40 lbs.	Per cent. decomposition
Quinine Bisulphate	10	-31 50	-29 49	6.9	-27 15	15.6	-8 25	79.8	-2 30	100.0
Quinidine Bisulphate	10	+40 36	+35 56	13.4	+30 0	30.4	+24 40	45.6	+5 40	100.0
Cinchonidine Bisulphate	10	-23 37	-17 45	26.8	-12 0	52.9	-2 30	96.2	+1 40	100.0
Cinchonine Bisulphate	10	+33 55	+30 2	1.8	+26 10	25.9	+4 15	98.1	+3 40	100.0
Quinine Bihydrochloride	60	-127 40	-127 40	0.0	-127 40	0.0	-127 23	0.2	-127 16	0.4
Quinidine Bihydrochloride	25	+110 15	+110 15	0.0	+110 15	0.0	+109 0	1.6	+106 30	4.9
Cinchonidine Bihydrochloride	33	-81 28	-80 30	1.1	-79 15	2.5	-80 0	1.7	-78 20	3.5
Cinchonine Bihydrochloride	50	+194 10	+194 55	0.8	+191 0	1.8	+188 20	3.4	+180 40	7.7

or not. The first names given these bodies—quinotoxin and cinchotoxin—suggest that they are decidedly toxic. But large quantities of cinchona febrifuge are administered in India containing high percentages of these bodies without apparently any evil results. Sollman ("J. Amer. Med. Assoc.," 1921, 76, 999) states that quinine is *not* especially toxic; and that even highly coloured solutions, where decomposition has taken place, are only less active and not toxic. Ganassini suggests sterilising at 100° C. to prevent any decomposition taking place; but this is objectionable, as it is well known that many spores are able to resist this temperature, whilst 120° C. is fatal to all. Taking all points into consideration, it seems advisable to use only the bihydrochlorides of the cinchona alkaloids for hypodermic solutions, sterilising at 120° for half an hour, when the solution will not contain any harmful amount of quinine or cinchonine.

DISCUSSION

The CHAIRMAN said he had always been curious on the subject of quinine salts, and accordingly the paper had interested him. In fact, the paper was full of interesting facts which would be of considerable help to them.

The next paper was:—

The Composition of Cinchona Febrifuge Mixtures, with Special Reference to their Quinidine Content

By BERNARD F. HOWARD, F.I.C., and OLIVER CHICK, A.I.C.

[ABSTRACT]

IN India and other tropical countries precipitated mixtures of cinchona alkaloids have long been used in the treatment of malaria. In the early days of the administration of the drug there was naturally no alternative to the use of mixed alkaloids, and even during the last fifty years, in which the principal constituents of cinchona have been separated, purified, and placed on the market in an almost pure condition, there has always been a considerable, although slowly decreasing, demand for febrifuges. Quinidine until quite recently took fourth place in importance in the cinchona group; quinine, cinchonine, and cinchonidine all found a readier market, and the demand for this particular alkaloid was very irregular and intermittent. H. W. Acton recommends quinidine as superior to all other alkaloids in benign tertian malaria, and recommends febrifuge, "as it contains 22.8 per cent. of quinidine . . . the efficacy of the total alkaloids is largely dependent on the quinidine content." Sir Thomas Lewis and others have also found a new use for it in the treatment of auricular fibrillation in heart cases, apparently with highly successful results. There has been a great tendency in the more recent publications on malaria treatment, as exemplified in the extract given above, to revert once more to the administration of mixed alkaloids or febrifuges on account of the high proportion of quinidine they are said to contain. At the British Medical Association Conference at Cambridge, 1920, Major H. W. Acton stated: "The red bark, *C. succirubra*, which produces about 4½ per cent. of quinidine and 1½ per cent. of other alkaloids, grows luxuriantly in India. For the amount of quinine extracted from Indian barks, five times that amount of quinidine could be obtained yearly." H. W. Acton, in a publication on "Quinine in Pharmacology and Therapeutics," quotes MacGilchrist's analysis of Indian Government febrifuge, containing the high percentage of 22.83 per cent. of quinidine. After attributing the efficiency of this febrifuge, partially, at any rate, to this high percentage of quinidine, he proceeds, by comparing the cost of this mixture with that of quinine, to claim great economy in administration of the comparatively cheap febrifuge. These deductions have obviously been based on erroneous data, due partly to confusion between the composition of Government febrifuge or *residual* alkaloid, on the one hand, and the actual distribution of the alkaloids as found by analysis of cinchona bark, on the other. An editorial article in the "Indian Medical Gazette" in May 1922 again points out the efficiency of the quinidine

constituent in cinchona febrifuge, and concludes with the following: "The proportion of dextro-alkaloids in whole cinchona febrifuge, however, is considerable; and it is clear that for general purposes cinchona febrifuge may now replace quinine. Tested clinically, 20 gr. a day of cinchona febrifuge yield as good or better results than do 30 gr. a day of quinine. It is pleasanter to take. It is, at present at least, infinitely cheaper. The cinchonas that are easily cultivated in India—viz., *succirubra officinalis*, etc.—would probably be able to supply most of the requirements of the country, and Major Acton's work seems likely to lead to an end of the costly importation of Java bark and quinine, and to render India, as regards its cinchona requirements, almost, if not quite, self-supporting." Again, in November 1922 Major R. N. Chopra states: "*Cinchona succirubra* gives a high yield of total alkaloids 10 per cent., but the quinidine and cinchonine contents predominate over that of quinine."

In all the cases quoted above the authors are obviously under some misapprehension as regards the following points:—(1) The contents of the bark used for febrifuge; (2) the method of manufacture of febrifuge; (3) the distribution of alkaloids in the febrifuge. To ascertain the actual alkaloid content of bark, some standard analysis must be established for the sake of argument, and for the purpose we have taken D. Hooper's results as given in "Atten's Commercial Analysis," 1886, Vol. III., Part 2, p. 447. As a proof that this may still be regarded as fairly typical of Indian-grown bark, we have also set out below for comparison an analysis of average Indian *Succirubra* stem bark of 1921:—

	D. Hooper's Analysis		Aver. Indian <i>Succirubra</i> stem, 1921
	Root	Stem	
Quinine alkaloid	1.24	1.69	1.145
Cinchonidine alkaloid	1.43	1.68	1.43
Quinidine alkaloid	0.41	0.00	0.00
Cinchonine alkaloid	0.77	2.03	1.735
Amorphous alkaloid	1.27	0.98	1.76
	5.12	6.38	6.07

David Howard, in a paper on "Cinchona Barks and Their Cultivation" ("Journal of Society of Chemical Industry," XXV., No. 3), states: "The root bark invariably contains more of the dextrogyrate alkaloids, quinidine, and cinchonine than the bark of the same tree above the ground." In this connection it may be of interest to note that the author's analysis of average bark worked at Howards and Sons' factory during the last five years shows a quinidine content between 0.2 per cent. and 0.22 per cent. This, of course, is mainly Java-grown Ledger bark, and the proportion of root and stem would not average more than 1 to 4, so that one would expect a somewhat lower percentage of quinidine in this bark than in the case of Indian *Succirubra*, but we can conclude that from average Indian *Succirubra* the quinidine would certainly not exceed 0.4 per cent.

We have now to consider the usual methods employed in the manufacture of febrifuge from bark. The first point to bear in mind is that the Indian Government factories, and we believe all other febrifuge makers, remove by crystallisation the majority of the alkaloids that crystallise most readily (i.e., those with less soluble sulphates) and precipitate the mother liquor with an alkali. On the basis of the analysis of Indian *Succirubra* given above, one would expect to obtain from 1,000 lbs. bark a quantity of 51 to 63 lbs. of total alkaloid. Of this 51 to 63 lbs. alkaloid, 27 to 34 lbs. would account for the whole of the quinine and cinchonidine, the remainder consisting of the more soluble alkaloids and amorphous alkaloid. If we assume that 80 per cent. of the quinine and 60 per cent. of the cinchonidine present in the bark are first removed by crystallisation, and that the mother liquor containing the remainder of the alkaloid content precipitated as febrifuge, we arrive at the fact that this quantity of bark would produce about 33 to 40 lbs. of febrifuge after removing about 18 to 23 lbs. of the quinine and cinchonidine present. The yield of febrifuge, therefore, that would be expected, if the usual procedure is followed, is from 3 to 4 per cent. We are quite

sure that some of the writers in the medical Press have been under the impression that the febrifuge on the market represented the whole of the alkaloids extracted from the bark, and consequently presumed that the distribution of the alkaloids would be the same in the febrifuge as that found by analysis of the bark. We have analysed a large number of different febrifuges from the Indian market over a period of years, and in every case the proportion of quinine to total alkaloid is so low as to convince us that the proceeding mentioned above has been followed. The only exception is a preparation known as quinetum, which is sold in small quantities on the market, and, although somewhat similar to febrifuge in appearance, contains the total alkaloids of the bark, and consequently commands a much higher price than commercial febrifuge.

It stands to reason, from what has been stated above, that there are bound to be considerable variations in composition of these precipitated residual products, owing to the varying amounts of the different alkaloids exhibited in different barks, and also the amount of crystallisable alkaloid removed before precipitation as febrifuge. It is, therefore, necessary to refer to some published analysis for the purposes of argument. MacGilchrist gave an analysis of febrifuge manufactured by the Indian Government which he regarded as typical, and which has so often been quoted in the Indian medical Press since that date as to have been regarded almost as text-book data. This analysis has been set out below in Column (A), compared with (B), the calculated composition of a febrifuge made from the residual alkaloid of a bark represented by Hooper's *Root* analysis, and (C) being the analysis of an actual febrifuge manufactured on a large scale by the authors on the lines mentioned above from average Java-grown manufacturing bark:—

	COLUMN "A." MacGilchrist's Analysis total	COLUMN "A1." Alkaloids only	COLUMN "B." Based on Hooper's Bark Analysis	COLUMN "C." Experimental Febrifuge	COLUMN "D." A febrifuge with extra Quinidine added to match MacGilchrist's Febrifuge
Quinine alkaloid	7.40	7.93	7.64	8.5	7.3
Cinchonidine alkaloid	5.84	7.03	17.43	7.0	6.0
Cinchonine alkaloid	16.58	20.02	23.55	28.3	24.4
Quinidine alkaloid	23.83	28.81	12.54	8.6	21.2
Amorphous alkaloid	29.12	35.21	38.84	44.7	38.5
Ash, Moisture, etc.	16.12	—	—	4.5	2.6
	98.89	100.00	100.00	101.6	100.00

It will be seen that there is considerable variation between these columns, but it must be noticed that MacGilchrist's analysis contains 16.12 per cent. of inorganic residue and moisture. This is altogether an excessive amount, as is shown by Column "C," where no difficulty was experienced in getting the amount of residue and moisture well below 5 per cent. In order, however, to get MacGilchrist's alkaloids to compare with the calculated Hooper formula, a column A1 has been added, in which the proportion of actual alkaloids, exclusive of impurities, is given, expressed in percentages. Reliable information has also been received by the authors that the percentage of quinidine in febrifuge manufactured by one of the Indian Government factories over a considerable period recently varied from 2.0 per cent. to 5.5 per cent. This is a very important point, as the medical experts quoted above have repeatedly recommended febrifuge on account of his high quinidine content, and they have invariably based their opinion on MacGilchrist's formula. The efficacy of quinidine as such would seem to have been established by Acton's work, but the efficiency claimed for febrifuge as a result of this work depends entirely on the standardisation of febrifuge (as for as its quinidine content is concerned) to MacGilchrist's formula. It is probable either

that this analysis was made on a very abnormal sample, produced from bark with a very high quinidine content, or the manufacturer has added some of this alkaloid to bring the proportion up to its present figure. In any case, there is no doubt that many medical experimenters rely on securing this proportion when they buy febrifuge on the market. In order to make some attempt to supply what the practitioners really require, the firm with which the authors are associated have for the last two years been supplying a "standardised" febrifuge, the analysis of which is shown in column "D" above. This is made by dosing the "natural" febrifuge "C" with sufficient quinidine alkaloid to bring it more or less into line with MacGilchrist's formula, but, of course, it is a more costly product, and cannot compete in price with the haphazard assortments of alkaloids. It must surely be regarded as a retrograde step when leading experts recommend a return to mediæval treatment, and administer a variable mixture of at least seven and probably more alkaloids, each having a distinct and in many cases quite dissimilar therapeutic effects. Is the replacement of pure alkaloid products, satisfying the increasingly severe demands of successive Pharmacopœias, by an unstandardised mixture of unknown toxicity and liable to almost unlimited adulteration, true economy?

The object which the authors have in view is *not* criticism of the recent admirable pharmacological researches on malaria treatment, but merely to sound a warning note as to the uncertainty of sundry chemical points, on which many of the deductions of those researches are to a large extent based.

DISCUSSION

The CHAIRMAN said they at once realised that Mr. Howard had a special position and facilities for putting right a matter of this kind, as the trouble had probably come before him in many ways. There had been a great deal of misunderstanding of what cinchona febrifuge mixtures were capable of, and some seemed to think that they were merely a mixture of the total alkaloids, which was quite an error. Their own thanks and, he was sure also, those of the medical men, were due to Mr. Howard for clearing up the matter, and he trusted the valuable collection of data which had been produced would be made full use of by the medical fraternity. They had always been more or less worried by the fact that medical men did not always pay full attention to such data, and in the past they had sometimes taken special steps to bring such information to their notice. On this occasion he asked the medical Press to give its attention to the matter.

MR. HAMPSHIRE said the matter was one mainly of interest to those supplying drugs for treatment of malaria in India and elsewhere. The drug was a comparatively new one, and unless properly handled by experienced people, it was perhaps dangerous. Nevertheless, it was of great value, and it would be coming more and more into use. They would all support Mr. Howard's remarks regarding the use of pure alkaloids instead of unknown mixtures.

MR. HOWARD, in a brief reply, stated that the drug was being increasingly used in this country, but in dealing with malaria it was supreme.

The two remaining papers, in the absence of the authors, were taken as read.

Observations on the Reducing and Oxidising Properties of Milk

By PAUL HAAS and T. G. HILL

[ABSTRACT]

MILK containing sodium nitrate, when heated to 45° C. in the presence of acetic aldehyde, shows reduction to nitrite in a few minutes. Nitrite production increases with stirring at regular intervals until a maximum is attained in about an hour, when amount of nitrite present decreases until in a further two hours it has disappeared completely. The production of a definite amount of nitrite indicates that the material responsible for the reduction is itself used up and the reaction is therefore not enzymic, though the substance is thermolabile and

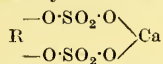
destroyed by prolonged heating to 75° C. If milk is mixed with acetic aldehyde and sodium nitrite and rotated in a thermostat with air, the nitrite is rapidly destroyed ten times as fast as it can be produced by the reduction of sodium nitrate. Here, again, a limit to the amount of nitrite destroyed indicates that the substance is used up during the process and is not an enzyme. The fact that oxygen is necessary for the destruction of the nitrite suggested oxidation to nitrate, a fact which has been experimentally demonstrated. From the above observations it is concluded that milk contains two substances which, in presence of acetic aldehyde, can exert reducing and oxidising properties respectively; both appear to be present in limited amount, being used up as a result of their activity. It is worthy of note that the disappearance of the substance capable of oxidising nitrite coincides with the disappearance of the so-called peroxidase reaction of milk, a circumstance which itself casts some doubt upon the enzymic nature of the peroxidase of milk. Furthermore, acetic aldehyde, which is an essential constituent for activating not only the above reducing and the oxidising substances but also the so-called Schardinger enzyme, can itself destroy these very substances, since milk, after rotation in a thermostat with air and aldehyde alone, becomes inactive towards nitrate, nitrite, methylene blue and guaiacum tincture and hydrogen peroxide.

Note on the Chemical and Physical Characters of Certain Mucilaginous Extracts of Seaweeds

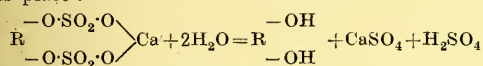
By PAUL HAAS and BARBARA RUSSELL-WELLS

[ABSTRACT]

It was shown some time ago that an extract of Irish moss consists of two distinct substances differing but slightly in chemical composition, and characterised by their different solubilities in cold water and the physical properties of their solutions. The high ash content of carageen was shown to be due to the fact that these substances both contain calcium in chemical combination with a hydrocarbon complex in the form of an ethereal sulphate, as expressed by the formula:—



in which R represents the organic complex. Aqueous solutions of these substances give reactions for the calcium ion, but not for the sulphate ion, until after prolonged acid hydrolysis, when the following change takes place:—



The fact that the highly viscous aqueous solutions of these substances contain ionised calcium suggested that they must belong to the group of colloidal electrolytes, and, as such, should be conductors of electricity and exert a measurable osmotic pressure; these views have received experimental verification from freezing point and conductivity determinations. The osmotic pressure of a 1.5 per cent. solution of the cold water soluble constituent was found to be 0.57 atmosphere, while conductivity measurements have shown the calcium to be ionised to the extent of 65.1 per cent. Furthermore, the basicity of the acid has been shown to be 2, thus corresponding with the formula given above. The investigation of similar extracts from other seaweeds has shown that analogous colloidal electrolytes exerting measurable osmotic pressures occur in several red algae:—*Ceramium rubrum*, *Delesseria sanguinea*, and *D. alata*, *Polysiphonia fastigiata*, *Plumaria elegans*, and, in one brown alga, *Ascophyllum nodosum*. Agar, which is also the extract of a red seaweed, likewise appears to belong to this group of substances, since, following on the authors' investigations, Neuberg and Ohle ("Biochem. Zeitschr.," 1921, 125, 311) were also able to establish, by similar methods, the presence of ethereal sulphate in this material, whilst the physical characters of this substance are receiving the attention of Professor Samec and his collaborators.

The Section adjourned at 4.40.

Science Section—Wednesday Morning

A small number of British members of the Conference, reinforced by a few delegates to the International Congress, assembled a few minutes after 9.30 in the Brown Room of the Hotel Great Central. The first paper taken was:—

A Further Examination of *Artemisia Brevifolia*

By HENRY G. GREENISH and CYRIL W. MAPLETHORPE.

[ABSTRACT]

In a previous contribution ("Pharmaceutical Journal," Vol. III., p. 2) by Professor Greenish and Miss C. E. Pearson, from the Pharmacy Research Laboratory, the presence of santonin was reported in the leaves of *Artemisia brevifolia*, Wallich. They reported 0.85 per cent. of santonin, which, after allowing for loss in extraction and crystallisation, indicated about 1 per cent. in the leaves. The importance of this discovery led to a larger supply of material being obtained. This consisted of leaves, root, stem, and a small amount of flowering tops. The stems varied in thickness from 1 to 8 mm., and were up to 40 cm. in length. The roots were from 1.5 to 3 cm. thick, and up to 12 cm. long. The material was collected on July 16, 1922, at Gurez, Kashmir. As it was found impossible, with the apparatus at disposal, to reduce the stems, roots, and leaves to a sufficiently fine powder, a quantity of each of these was powdered by Wright, Layman & Umney, Ltd. The small quantity of flowers available was powdered by the authors. Fifty gm. of powdered leaves was packed in a Soxhlet and completely extracted with hot chloroform. The chloroformic extract was distilled until the residue measured about 20 c.c.; 250 c.c. of saturated solution of barium hydroxide was then added, and the mixture heated until all the chloroform was driven off. A large amount of green resinous material was thus separated. The mixture was filtered hot, and the flask and filter paper washed with hot water. While still hot, the solution was made acid with 15 gm. of hydrochloric acid (containing 25 per cent. of HCl), and when lukewarm was transferred to a large separator. The flask was washed with 40 c.c. of chloroform, the chloroform added to the liquid in the separator, and the whole shaken for two minutes. After separation the chloroformic solution was drawn off and the operation repeated with two more successive quantities of 40 c.c. each of chloroform. The mixed chloroformic solutions were distilled to dryness, the residue dissolved by the aid of heat in 15 c.c. of absolute alcohol, and 85 c.c. of hot distilled water then added. The turbid liquid thus obtained was immediately filtered into a tared Erlenmeyer flask, and the residue on the filter washed with two portions of 10 c.c. each of 15 per cent. alcohol. The solution, which was still turbid, was allowed to stand for sixty hours for crystallisation to take place. The crystals were collected on a tared filter. The flask was rinsed with 20 c.c. of 15 per cent. alcohol, and this was used to wash the santonin crystals that had separated and the filter paper. After drying, the flask and filter paper were weighed. The crystals thus obtained were slightly brownish in colour. In a second determination two portions of 50 gm. each of powdered leaves were completely extracted with chloroform. The extracts were mixed and treated in the same way as before.

	Leaf	Crystals	Crystals
1.	50 gm.	0.237 gm.	0.474 per cent.
2.	100 gm.	0.500 gm.	0.500 per cent.

Average percentage of santonin weighed 0.487. No allowance is here made for the santonin left in solution. It was thought that possibly the whole of the santonin was not extracted by the barium hydroxide solution, so the resinous residue from the first experiment was redissolved in chloroform and re-extracted with 100 c.c. of barium hydroxide solution. The solution so obtained was treated in the same way as the original solution, but no crystals were obtained. Two quantities of 50 gm. each of the powdered stem were completely extracted with chloroform. The extract was treated in exactly the same way as that from the leaves. No crystals were obtained. It is concluded, therefore, that the stems contain no san-

tonin, or at least no more than will remain in solution in the crystallising liquid. The roots were examined in the same way as the stems, and with the same result. The total quantity of flowering tops available was only about 80 gm., representing about 0.06 per cent. of the total material. There was little actual flower in this. It was, however, powdered, and 25 gm. was completely extracted with hot chloroform. The chloroformic extract was treated in the same way as the extract from the leaves. No crystals separated. The following table shows the percentage of ash and moisture in the leaves, stems, and roots, together with the percentage of santonin weighed, the percentage calculated on the drug dried at 100°, and the percentage after the addition of a correction for the amount of santonin left in solution :—

Part used	Ash	Moisture (at 100°)	Santonin weighed	Santonin calc. on drug dried at 100°	Santonin after correction
Leaves ..	10.50	6.54	0.487	0.519	0.579
Stem ..	4.73	5.61	Nil	Nil	Nil
Root ..	4.40	8.06	Nil	Nil	Nil
Flowering-tops ..	5.39	4.29	Nil	Nil	Nil

The combined crystalline residues, which were slightly brownish in colour, were purified by recrystallising from 15 per cent. alcohol and decolourising with a little animal charcoal. The crystals so obtained were then quite colourless. These crystals, powdered and dried at 70°, melted at 171°. The melting point of santonin is 170°. Exposed to bright sunlight, they rapidly assumed a yellow colour. From the results it will be seen that the yield of santonin is only about half of that obtained by Professor Greenish and Miss Pearson. This may be accounted for by the material having been collected at a different stage in the development of the plant, or by variation in climatic conditions. The leaves are the only part of the plant that have any value from the standpoint of santonin extraction.

DISCUSSION

The CHAIRMAN, in opening the discussion, mentioned that he had received a letter from China on the subject of experimental trials with various species of *Artemisia*. His correspondent, however, had failed to find any santonin.

Professor GREENISH commented on the paucity of flowers in the species examined at Bloomsbury Square, few or none being the rule. The plant in question grows very freely in Northern India, and the extraction of santonin from it should be a paying proposition.

The CHAIRMAN suggested that the extraction might with advantage be carried out locally, even if the refining of the product had to be done in this country.

Mr. SAGE asked whether it was known what the species of santonica offered, both on the English and the New York markets, were that proved to contain no santonin.

Professor GREENISH said that it was very difficult to distinguish between the species microscopically. There was no appearance of the santonin having been removed: probably this species of *Artemisia* came from Persia.

The CHAIRMAN expressed the thanks of the section to the author.

The next paper was :—

Notes on East African Cinchona Barks

By HENRY G. GREENISH, D.-ès-Sc., F.L.S., Ph.C., and C. E. CORFIELD, B.Sc., F.I.C., Ph.C.

[ABSTRACT]

It is a matter of common knowledge that Java furnishes at present the bulk of the cinchona bark which is used either for the extraction of quinine or for the manufacture of pharmaceutical preparations. The statistics of production of cinchona bark are summarised in the Bulletin of the Imperial Institute as follows :—Java, 22,880,000 lb.; India, 2,000,000 lb.; other countries, 440,000 lb. Many attempts have been made to cultivate cinchona trees in other countries. In some, failure resulted; in others, success. Among the latter was that

made in German East Africa, where cinchona trees are grown on several European plantations, and also at the Amani Institute. In 1903, Zimmermann reported that there were at the Institute 5,000 trees of the best varieties doing well. In 1913 there were 2,143 trees of *C. Ledgeriana*, 3,878 of *C. succirubra*, 1,020 of *C. robusta*, and 2,675 of hybrids. The bark of *C. Ledgeriana* had yielded 10.55 per cent. of quinine, of hybrids of that tree, and *C. succirubra* 8.0 and 8.1 per cent., and of *C. robusta* 4.87 per cent. During the war the Amani Institute passed into the hands of the British, and with it the cinchona trees growing there. Four specimens of bark from the Institute were examined in 1918 at the Imperial Institute with the following results :—

—	No. I. <i>C. Robust</i>	No. II. <i>C. Succirubra</i>	No. III. <i>C. Ledgeriana</i>	No. IV. <i>C. Ledgeriana and C. Succirubra</i>
	Per cent.	Per cent.	Per cent.	Per cent.
Moisture ..	8.1	7.9	8.9	7.5
Total alkaloid ..	7.61	8.32	5.00	11.30
Quinine ..	2.66	2.54	3.81	8.41
Cinchonidine ..	3.51	2.05	Nil	Nil
Yield of cryst. quinine sulphate ..	3.55	3.39	5.08	11.21

Of these, No. IV. is exceptionally rich in quinine, containing nearly twice as much of that alkaloid as average commercial Ledger bark. It was with great interest, therefore, that the Research Laboratories received from the Director of the Amani Research Institute samples of the bark of three cinchona trees with a request to assay them and report to him. The trees from which these barks were derived were hybrids of *C. succirubra* and *C. Ledgeriana* and were marked No. I., No. II., and No. III. No. I. was in the form of handsome single or double quills, about 25 cm. long, 3 cm. in diameter, and 3 to 4 mm. thick. The outer surface showed strong longitudinal wrinkles (generally regarded as characteristic of *Succirubra* bark), few and distant traverse cracks, and scattered, somewhat indistinct, warts. The cork showed little disposition to exfoliate. The colour of the transverse section and inner surface was reddish brown; the taste was very bitter, without much astringency. No. III. was very similar in appearance; the longitudinal wrinkles were in general less marked, but on one thin (1 mm.) piece they were conspicuous, this piece closely resembling *Succirubra* branch bark. No. II. was also in handsome quills, but the bark showed distinct differences from both No. I. and No. II. The quills were larger (up to 4.5 cm. in diameter) and the bark thicker (up to 6 mm.); the longitudinal wrinkles were more or less completely replaced by the longitudinal cracks; there was more disposition for the cork to exfoliate; the colour was slightly more reddish and the taste more astringent. The assay of these barks gave the following results :—

—	No. I.	No. II.	No. III.
	Per cent.	Per cent.	Per cent.
Moisture ..	7.8	7.3	7.3
Total alkaloid ..	10.2	10.26	11.83
Quinine ..	6.97	5.45	6.77
Cinchonidine ..	0.62	2.70	0.73
Quintidine ..	Nil	Nil	Nil
Yield of cryst. quinine sulph.	9.48	7.41	9.20

The total alkaloid was determined by the method official in the Pharmacopœia of the United States, IX. For the determination of the quinine and cinchonidine the process given in Thorpe's "Dictionary of Chemistry," 2nd ed., p. 261, was followed. The richness of Nos. I. and III. in quinine, and the comparatively small amount of other alkaloids present, would amply justify the extension of the cultivation of these two trees, provided that the labour conditions were sufficiently favourable.

DISCUSSION

Mr. D. LLOYD HOWARD said that this note was an extremely interesting one for several reasons. Professor Greenish had drawn attention to one very remarkable hybrid which was probably a record, because 11.21 per cent. of quinine sulphite was a very exceptional yield.

With regard to the specimens shown, they were very handsome quills, and possibly that for that reason they might be of higher value as pharmaceutical bark than for their high quinine content. If they were to be used for manufacturing, it would not be necessary to find the amount of money necessary to make the quill, but the bark could be stripped and dried. In neither case was there any mention made of cinchonine. It would be interesting to know whether the cinchonine was estimated, or whether these barks actually were tested for cinchonine and found to contain none. With regard to the economic question, all agreed with Professor Greenish that the Dutch have the monopoly of the supply of manufacturing bark. Unfortunately, the British East India planters of twenty-five to thirty years ago, having already taken time by the forelock, let that forelock go for various reasons, and to-day the world's consumption, owing to the result of the war, was less than before the war. Russia used to take before the war scores of tons of quinine, and now she can take very little because she could not pay for it. The available supplies of bark were more than sufficient for many years to satisfy the world's consumption, so that unless we found some new use for quinine, or unless the old uses increased enormously, the supply would be more than equal to the demand, and so it might be possible for a Government department that had the money and took a long view to start the raising of cinchona in British territory. So far as we could see at present, if a large amount were launched on the market four or five years hence, it might produce a collapse of the market, which would be very disastrous. The results obtained by the authors showed that the Amani Institute had command of land which is peculiarly suitable for the cultivation of cinchona. By this means all land that is available was suitable for cinchona. It was only a portion of the countries in which cinchona was grown which were suitable for its cultivation; cinchona land eventually got tired, and the existing plantations would in course of time wear out. He thought that, if cultivation in British East Africa was to become a paying proposition, it would be a matter of considerable capital and great patience. Mr. NAYLOR understood that there was a promise of quinine coming into use in India, and inquired whether Mr. Howard could tell the meeting whether barks were now worked for quinidine.

Mr. HOWARD replied that quinidine was almost invariably found in the root bark. There were some cases in which quinidine was found to give better results than quinine. Work done in different sorts of malaria showed that one alkaloid cures one and one the other. There was as a use for quinidine in elegant pharmacy; quinidine, being the more valuable alkaloid, made a nice bright wrap, better than one made with quinine.

Mr. SAGE, after expressing his indebtedness to Professor Greenish, suggested that we had in this country a peculiar type of man who preferred to do business rather than to manufacture in this country. At the present time, he believed, it would be better business to know all about these barks and to do the work in this country and then to ship them. At one time 400,000 lb. of bark went through his hands, and among the outside barks there were certainly a number which were abnormal. In England, thirty years ago, we had no definite system of sampling. Analytical figures were reliable for the samples which we did obtain, but they did not agree with some of the figures obtained on the Continent. He (the speaker) was somewhat doubtful whether a quinine manufacturer would take Professor Greenish's figures. If we can have a Government plantation to give us so many thousands of tons a year, we must have the organization. Then we must consider whether Messrs. Howards will keep all this bark in this country or ship it to New York or Hamburg. At the present time everything is tied up in the question of over-production in Java. Dutch plantations have got us in the hollow of their hand. Professor Greenish had told them all about his bark and where we are going to get it; it might become an Empire proposition rather than one which is of purely scientific interest. It was one of the most interesting papers of the Conference.

Mr. FARR, speaking from a retailer's point of view, remarked that one sample of B.P. bark would yield about twice as much of a galenical as another on account of the varying solubility of the contents. Could not something be done in the way of a test for solubility? Did the wholesalers reserve all those barks having a high solubility and let retailers have the rest, or what did happen? (Laughter.) He was glad to hear that there was a possibility of production within the British possessions, because it is not desirable that the whole production should be dependent upon any foreign nation, however friendly.

Professor GREENISH, replying to various points raised, said that the tests were all carried out in the Pharmaceutical Society's research laboratory, and the figures were correct. It was interesting to have these barks, to know the proportion of cinchonine they hold and that there was a possibility of these trees being cultivated on what is now British soil. He imagined that the Germans knew very well what they were doing out there. His laboratory had some coca leaves from *Erythroxylon novogranatense*, a species which is very seldom cultivated and that contains 1½ per cent. of alkaloids, and no doubt the Germans had a scheme in contemplation. So far as his experience went, it was very difficult at the present day to get a true *Cinchona succirubra*. Trees were very liable to hydridise.

Mr. PINNEMORE suggested that the results of the authors had not been carried to a practical conclusion. There ought to be, he added, some means of encouraging the cultivation of this tree, or the results would remain "in the practical obscurity of our journals."

Professor GREENISH replied that Mr. Leechman was anxious to do anything he could to justify the continuation of the Amani Institute as such. It had been suggested that the Institute should be continued as an agricultural station. He (the Professor) had no particular love for agricultural stations: drugs were drugs. There were about 5,000 of these trees in cultivation at the Institute, which, it had been decided, was to be carried on as a research institute. (Hear, hear.)

The CHAIRMAN briefly thanked the authors of the paper.

The next paper was:—

Notes on Tinctura Cardamomi Composita, B.P.

By J. H. FRANKLIN and J. GREENHALGH

[ABSTRACT]

SAMPLES of tinctura cardamomi composita, B.P. 1914, taken from a large batch, deposited about 10 per cent. in filtered specimens, but contained about 40 per cent. of unsightly precipitate in unfiltered samples. Tincture without glycerin also deposited badly. Of a range of tinctures made with 45 per cent. alcohol, but substituting for glycerin (a) honey, (b) sugar, and (c) glucose, that made with honey was quite free from deposit after four months, and the tincture containing sugar showed only a trace of precipitate. The glucose preparation was discarded owing to change in colour of finished product. Tinctures containing 60 and 70 per cent. alcohol are quite free from deposit with glycerin and sugar, but the increase in alcoholic strength causes deposit (of different character to normal) with honey and glucose. Colour of tincture with stronger alcohol is paler than ordinary preparation. Simple tinctures of B.P. strength were prepared from separate ingredients. These showed no deposition in the case of tincture of cardamoms and tincture of cinnamon. The tincture of caraway clouds badly when cooled, and gives a slightly flaky deposit. Tincture of cochineal possesses a very decided flaky deposit. A tincture containing both cochineal and caraway in 45 per cent. alcohol gave a bulky gelatinous precipitate, which showed these two ingredients are the cause of the troublesome deposit in tr. card. co. The tincture is also saturated with oil, which is precipitated in cold weather. Thus there are two separate disturbing factors. The addition of 10 per cent. of glycerin reduces the alcoholic strength of the B.P. preparation to about 40 per cent. The experiments with the simple tinctures of the separate ingredients prove that 40 per cent. of alcohol in the finished tincture is not sufficient to retain

all the oils in solution in the colder months of the year, or to prevent the gelatinous deposit at ordinary temperatures. Both of the following formulas give a tincture practically identical in character with the present B.P. tincture, but free from the troublesome, gelatinous, and unsightly deposit even when kept in ice water at 32° F. for two months:—

Cardamom seeds (No. 20 powder), 14 grams.
Caraway fruit (No. 20 powder), 14 grams.
Cinnamon bark (No. 20 powder), 28 grams.
Cochineal (No. 20 powder), 7 grams.
Sugar (or glycerin), 100 grams.
Alcohol (45 per cent.), a sufficient quantity.
Alcohol (90 per cent.), sufficient to produce 1,000 mls.

Prepare in the usual manner with 45 per cent. alcohol to get a product of 800 mls. without subjecting the marc to pressure. Add the sugar or glycerine and a sufficient quantity of 90 per cent. alcohol to produce 1,000 mls. Allow to stand and clarify by subsidence or filtration, as directed in the B.P.

This method (without pressing) produces a better tincture than when the marc is subjected to pressure, and retains the alcoholic strength of the preparation at practically 45 per cent. (the original strength of the alcohol used for extraction). The finished product is almost identical in character with the present official tincture, but is improved, in the authors' opinion, by the addition of sugar. It is rather sweeter, and more in agreement with the older tincture made with raisins than the present official tincture prepared with glycerin. The paper by Messrs. Hill and Umney, published in the "British and Colonial Pharmacist" in 1915, was overlooked until the experiments were completed. Their recommendation to use 60 per cent. alcohol gives a perfectly satisfactory preparation. However, the economical factor is important, and a tincture prepared as above shows a saving of 25 per cent. of alcohol over a tincture made with 60 per cent. alcohol, a consideration owing to the present cost of alcohol. The work for this note was carried out in the laboratories of Jas. Woolley, Sons & Co., Ltd.

The authors added a note to the paper to the effect that they had also prepared a satisfactory tincture containing an additional 10 per cent. of the dried ingredients.

DISCUSSION

The CHAIRMAN said it was informing to have this type of experiment carried out: the authors had got to the bottom of the trouble. While it was easy to get over the difficulty in this case with 60 per cent. alcohol, that plan was almost a waste of good spirit. The less alteration there was in colouring matters, the better. Any change involved serious considerations for every practising pharmacist. The Codex committee had, in this connection, come to the conclusion that to change colourings would lead to an infinity of bother.

Mr. C. H. HAMPSHIRE remarked that the University College Hospital formula for this tincture contained sugar in place of raisins, and was a good product.

Mr. J. RUTHERFORD HILL pointed out that this tincture was unsatisfactory in many circumstances. Mr. McCutcheon suggested, in 1906, the use of essential oils instead of the corresponding drugs, and this method gave a uniform tincture. Alcohol was unnecessary as a preservative for what was virtually a saturated solution of essential oils: sugar was a solvent for them, and honey was better still. The precipitate for the cochineal was probably of a fatty nature, and he suggested removing the colouring matter with water. This was an eminently practical paper. (Applause.)

Mr. R. R. BENNETT inquired whether Mr. Franklin had found samples of cochineal vary a great deal. Perhaps the 1914 B.P. formula was inherently unsatisfactory, but the selection of the cochineal might be of some importance. The insects might vary, as might methods of drying and storage.

Mr. FOURACRE remarked that the tincture at Westminster College Hospital ordered the respective essential oils and solution of carmine; it was made of double strength.

Mr. FORSTER remarked that there was no deposit with

a proprietary compound cardamoms mixture used in the North.

Mr. SAGE said there was a great difference between cochineal as exported from the Canary Islands and the cochineal of commerce. Barium salts were sometimes found in the latter.

Mr. FRANKLIN, replying to the discussion, agreed that a compound tincture of cardamoms made with essential oils was a more satisfactory preparation than the official one. The precipitate in the latter was an elusive one—as much as 30 per cent. or more might be present and be difficult to distinguish. He was unable to agree with the chairman on the question of colouring agents: the Parrish's food of the Codex was another instance of an unsatisfactory colouring agent.

The CHAIRMAN, in thanking the authors, repeated that colouring matters formed a difficult subject, and one that was to be found in the research list of the Conference. Every pharmacist knew what had happened with reference to the suggested colouring of liquor strychninae. Aniline colours were prone to change on exposure to light and on mixing with other substances. Retailers might work at this problem in the light of dispensing experience.

The next paper was:—

Lithium, Sodium, Potassium, and Ammonium Hippurates

By C. E. CORFIELD, B.Sc., F.I.C., Ph.C., and B. W. MELHUSH, A.I.C., Ph.C.

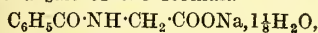
[ABSTRACT]

THE use of hippuric acid, chiefly in the form of its salts, has of late years increased. These salts have been used for lowering the blood pressure; the sodium and ammonium compounds are given in arterio-sclerosis; the lithium compound is said to dissolve urates and therefore to be used in the treatment of gout. The composition of these hippurates appears to be somewhat doubtful, owing possibly to the fact that they have not been under examination for some considerable time. Schwarz ("Ann. Pharm.," 1845, 54, 29), by neutralisation of hippuric acid with the respective carbonates, prepared a normal hippurate of sodium to which he gave a formula equivalent to $C_6H_5CO \cdot NH \cdot CH_2 \cdot COONa$, and a normal potassium salt equivalent to $C_6H_5CO \cdot NH \cdot CH_2 \cdot COOK, H_2O$. From a solution containing an excess of hippuric acid over the amount required to neutralise the potassium carbonate he obtained an acid hippurate of potassium corresponding to $C_6H_5CO \cdot NH \cdot CH_2 \cdot COOH$, $C_6H_5CO \cdot NH \cdot CH_2 \cdot COOK, H_2O$, but there is no mention of the formation of a corresponding acid salt of sodium. Gerhardt ("N.J. Pharm.," 21, 314) suggested that the acid compound of potassium was a mixture of hippuric acid and the normal salt. Schwarz was unable to prepare a normal hippurate of ammonium by evaporation of a solution of hippuric acid in excess of ammonia; to his product, which was acid in reaction, he gave a formula equivalent to $C_6H_5CO \cdot NH \cdot CH_2 \cdot COOH$, $C_6H_5CO \cdot NH \cdot CH_2 \cdot COONH_4, H_2O$. Hoitsema ("Zeit. Physik. Chem.," 27, 317), working on solubility isothermals of salts in the presence of a common ion, found that potassium hippurate and hippuric acid formed a double salt, and obtained no evidence of mixed crystals or complex molecules. Le Roy MacAlister ("J.A.C.S.," 1904, 36, 1923) prepared a series of neutral ammonium salts of organic acids by passing ammonia gas into saturated alcoholic solutions of the respective acids. Among others he prepared a normal ammonium hippurate, the analysis of which led him to give it the formula $C_6H_5CO \cdot NH \cdot CH_2 \cdot COONH_4$. The British Pharmaceutical Codex, 1911, gives the composition determined by Schwarz to the potassium and ammonium hippurates; the composition of the sodium salt is given as $C_6H_5CO \cdot NH \cdot CH_2 \cdot COONa, \frac{1}{2}H_2O$. The authors of this paper have examined these hippurates with the object of determining more definitely their composition.

Lithium Hippurate.—The lithium compound was prepared by neutralising lithium carbonate, suspended in hot water, with a hot aqueous solution of hippuric acid, phenolphthalein being used as an indicator. The solution was concentrated until crystals were deposited, which

were recrystallised twice from water and then dried on a porous plate. By slow evaporation of a concentrated solution the compound was obtained in the form of thin rectangular plates. One gm. of this compound, which was neutral to litmus, was kept in solution for twenty-four hours at 15.5° C. by 2.5 c.c. of water. The water of crystallisation was determined by drying in an air oven at 110° C. for six hours; the percentage of lithium was determined by conversion of the anhydrous residue, from the previous experiment, into lithium sulphate. The following results were obtained:—1 gm. lost 0.1650 gm. of water. 0.8452 gm. of the anhydrous residue yielded 0.2467 gm. of anhydrous lithium sulphate. These are equivalent to 16.50 per cent. of water of crystallisation and 3.715 per cent. of lithium, which correspond to a salt of the formula $C_6H_5CO \cdot NH \cdot CH_2 \cdot COOLi \cdot 2H_2O$, which requires 16.35 per cent. of water of crystallisation and 3.78 per cent. of lithium (anhydrous salt). Attempts were made to prepare an acid salt by dissolving molecular proportions of lithium hippurate and hippuric acid in hot water and evaporating to crystallisation. On cooling large prismatic needles crystallised out, which were separated from the mother liquor. The crystals, which resembled hippuric acid in appearance, were found to contain no trace of lithium, and melted at 187°—the melting point of hippuric acid. The mother liquor was evaporated to a low bulk, when most of the remaining hippuric acid was separated out, and after further evaporation the characteristic rectangular plates of lithium hippurate were obtained. These crystals were dried in an air oven at 110° C. for six hours and then converted into lithium sulphate. 0.3366 gm. of the anhydrous residue yielded 0.0978 gm. of lithium sulphate, which is equivalent to 3.70 per cent. of lithium, and corresponds to the percentage of lithium in the normal salt.

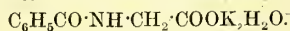
Sodium Hippurate.—A sodium hippurate was prepared by neutralising a hot solution of hippuric acid with a solution of sodium carbonate. The resulting solution, which on evaporation to a low bulk did not deposit crystals, was evaporated to dryness on a water-bath. The dried mass was extracted with warm 97 per cent. alcohol; crystals in the form of rosette-like tufts separated from this alcoholic solution on cooling; they were filtered off and dried in the air on a porous plate. The product was neutral to litmus and very soluble in water; 2 gm. was kept in solution for twenty-four hours at 15.5° C. by 1 c.c. of water. The water of crystallisation in the compound was determined by drying in an air-oven at 110° C. for six hours; the sodium was determined by converting the anhydrous residue into sodium sulphate. The analysis gave the following results: 2 gm. lost 0.2340 gm. of water; 1.1711 gm. of the anhydrous residue gave 0.4119 gm. of anhydrous Na_2SO_4 . These are equivalent to 11.70 per cent. of water of crystallisation and 11.40 per cent. of sodium. The following figures obtained on a further sample, prepared in a similar manner, confirm our analysis: 2 gm. lost 0.2384 gm. of water; 0.8399 gm. of the anhydrous residue yielded 0.2949 gm. of anhydrous Na_2SO_4 . These are equivalent to 11.92 per cent. of water of crystallisation and 11.37 per cent. of sodium. These two results correspond to a salt of the formula



which required 11.84 per cent. of water of crystallisation and 11.44 per cent. of sodium (anhydrous salt). Both the above samples, after standing over concentrated sulphuric acid for five days, gave products which, when dried as above, lost 8.30 per cent., which corresponds to one molecule of water. On attempting to prepare an acid hippurate of sodium from a solution containing molecular proportions of hippuric acid and sodium hippurate, the result was similar to that in the case of lithium.

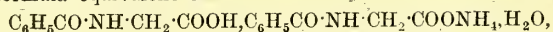
Potassium Hippurate.—Potassium hippurate was prepared by neutralising a hot solution of hippuric acid with a solution of potassium carbonate. No crystals were deposited on evaporation to a low bulk, and the solution was taken to dryness on a water-bath. The residue was extracted with 95 per cent. alcohol, and from the solution crystals in the form of plates separated.

This compound was neutral to litmus, deliquescent, and very soluble in water; 1 gm. was kept in solution for twenty-four hours at 15.5° C. by 0.3 c.c. of water. As the substance was deliquescent, it was dried over concentrated sulphuric acid before the percentages of water of crystallisation and of potassium were determined. The following results were obtained: 1 gm. lost 0.0758 gm. of water; 0.4549 gm. of the anhydrous residue yielded 0.1812 gm. of anhydrous K_2SO_4 . These are equivalent to 7.58 per cent. of water of crystallisation and 17.85 per cent. of potassium, which correspond to salt of the formula $C_6H_5CO \cdot NH \cdot CH_2 \cdot COOK \cdot H_2O$, which requires 7.66 per cent. of water of crystallisation and 17.9 per cent. of potassium (anhydrous salt). A further specimen of potassium hippurate was prepared as above, but in this instance the mass, after drying on the water-bath, was extracted with 99 per cent. ethyl alcohol. From the solution a mass of white, silky needles separated. This compound was neutral to litmus, deliquescent, and had the same solubility as the previous specimen. It was dried over concentrated sulphuric acid, and analysed with the following results: 1 gm. lost 0.744 gm. of water; 0.7740 gm. of the anhydrous residue yielded 0.3052 gm. of anhydrous K_2SO_4 . These are equivalent to 7.44 per cent. of water of crystallisation and 17.68 per cent. of potassium, and these results also correspond to a salt of the formula

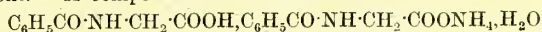


An attempt was made to prepare an acid hippurate of potassium by a method similar to that described under the lithium and sodium compounds; the same result was obtained—separation of hippuric acid.

Ammonium Hippurate.—Schwarz prepared the ammonium compound of hippuric acid, to which he gave a formula equivalent to

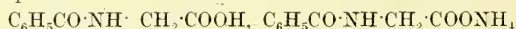


by evaporation of a solution of hippuric acid dissolved in excess of strong ammonia solution. He obtained this compound in a crystalline form, found it to be acid in reaction, and noticed that the crystals did not all dissolve at the same rate when moistened with water, which led him to think that he was dealing with a mixture of two substances. From the analysis of the material, however, he was convinced that he had prepared a single substance—an acid hippurate of ammonia. The analysis consisted of the determination of water of crystallisation, hydrogen, and carbon; water of crystallisation was determined by drying at 100° C., a method which is quite unsatisfactory, since it is well known that ammonium salts of organic acids lose ammonia when heated. Three sets of figures for the percentages of hydrogen and carbon are given, the average being hydrogen, 6.055 per cent.; carbon, 54.61 per cent. A compound of the formula



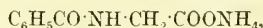
requires 5.85 per cent. of hydrogen and 54.96 per cent. of carbon, whilst $C_6H_5CO \cdot NH \cdot CH_2 \cdot COONH_4$ requires 6.12 per cent. of hydrogen and 55.10 per cent. of carbon, and we are of the opinion that the result of Schwarz's analysis no more entitled him to assume that he had obtained an acid ammonium hippurate than a normal hippurate contaminated with free acid. We have prepared a substance according to the directions of Schwarz. A crystalline mass was obtained which was dried in the air on a porous plate. These crystals were acid to litmus, and when moistened with water did not dissolve uniformly, a less soluble portion floated on the surface of the liquid. The undissolved portion was filtered off, washed, and examined under the microscope; it appeared as quadratic prisms with pointed ends, a crystalline form identical with that of hippuric acid. A portion of the substance was dried *in vacuo* over sulphuric acid, when it lost less than 1 per cent. of its weight and the dried material was used for the determination described below. Nitrogen was determined by a modified Kjeldahl method. Ronchese ("Analyst," 1907, 32, 303) has shown that neutral ammonium salts behave as acids in the presence of excess of formaldehyde, and that they can be determined by titration with alkali. This principle was employed to determine the total hippuric acid, any free hippuric acid being

first converted into the ammonium salt by addition of ammonia solution. The determination was carried out in the following manner:—About 0.4 gm. of the compound was placed in 20 c.c. of distilled water, two drops of phenolphthalein solution added, and solution of ammonia drop by drop until the solution was alkaline; 20 c.c. of formaldehyde solution (20 per cent. $\text{H}\cdot\text{CHO}$), followed by 20 c.c. of approximately $N/5$ NaOH solution, and the excess of alkali titrated with $N/20\text{NCl}$. A blank titration was carried out with $N/20$ HCl against 20 c.c. of water made just alkaline with a drop of ammonia solution, two drops of phenolphthalein solution as indicator, 20 c.c. of the formaldehyde solution and 20 c.c. of the approximately $N/5$ NaOH solution. These determinations gave the following results:—13.34 per cent. of nitrogen, 92.80 per cent. of hippuric acid. A compound of the formula

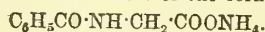


requires 11.20 per cent. of nitrogen and 95.47 per cent. of hippuric acid, while $\text{C}_6\text{H}_5\text{CO}\cdot\text{NH}\cdot\text{CH}_2\cdot\text{COONH}_4$ requires 14.29 per cent. of nitrogen and 91.33 per cent. of hippuric acid. The results of the above analyses do not correspond with either of these percentage compositions, and, as the substance was not uniformly soluble in water, and as crystals resembling hippuric acid in appearance were detected in the moistened mass of crystals, we are of the opinion that the substance thus prepared was a mixture of normal ammonium hippurate and free hippuric acid. This is supported by the fact that solutions of ammonium salts of many organic acids readily lose ammonia on evaporation. The figures obtained by our analyses are consistent with such a mixture:—

92.8 per cent. of hippuric acid is equivalent to 7.26 per cent. of nitrogen. \therefore in 100 gms. of the substance, $(13.34 - 7.26) = 6.08$ gms. of nitrogen are present as NH_3 , 6.08 gms. of nitrogen = 7.38 bms. of NH_3 , 7.38 gms. of NH_3 are combined with 77.65 gms. of hippuric acid to form 85.03 gms. of normal ammonium hippurate. \therefore $(92.8 - 77.65) = 15.15$ gms. of free hippuric acid are present. The substance prepared was, therefore, shown to be mixture of approximately 85 per cent. of normal ammonium hippurate and 15 per cent. of free hippuric acid. A neutral salt was prepared according to the directions of Le Roy MacAlister. Hippuric acid was dissolved in hot 95 per cent. alcohol to form a saturated solution, and dry ammonia gas was passed into this solution until saturated; the solution was cooled and ether added to precipitate the ammonium salt. The compound precipitated as pearly white laminae was washed with ether and dried. A further specimen was prepared by saturating a solution of hippuric acid in acetone with ammonia, when the compound was precipitated directly. Both products were neutral in reaction, and 1 gm. was kept in solution for twenty-four hours at 15.5°C . by 0.6 c.c. of water. On standing *in vacuo* over concentrated sulphuric acid it lost only a very small percentage of its weight (0.16 per cent.). This dried material was used in the determination of nitrogen and of hippuric acid by the method described above. Analysis gave the following results:—14.26 per cent. of nitrogen, 91.22 per cent. of hippuric acid. These figures correspond to a salt of the formula



which requires 14.29 per cent. of nitrogen and 91.33 per cent. of hippuric acid. The analysis confirms the work of Le Roy MacAlister, but we recommend the following alternate method for the preparation of this neutral ammonium salt:—Hippuric acid is dissolved in a volume of strong ammonia. The solution is concentrated slowly on a water-bath, and at the same time ammonia gas is passed in to ensure the presence of excess of ammonia during evaporation. When concentrated to a low bulk in this manner and allowed to cool, crystals in the form of thin hexagonal plates are deposited. The product was deliquescent, and lost ammonia on exposure, but was found to be quite stable in a dry atmosphere. One gm. was kept in solution for twenty-four hours at 15.5°C . by 0.6 c.c. of water. On analysis it gave 14.27 per cent. of nitrogen and 91.23 per cent. of hippuric acid, which corresponds to the normal salt of the formula



DISCUSSION

Mr. SAGE, humorously explaining that the gilded chair was responsible for his getting on his feet so often, suggested to the authors, not by way of criticism of the valuable work they had done, that an examination with a view of proving the absence of impurities was vitally essential.

Mr. MAPLETHORPE suggested that it would be interesting to know if the authors had examined commercial hippuric acid, and, if so, how the preparations they have prepared compared with commercial samples that can be purchased.

Mr. EVERS remarked that hippuric acid was an intractable substance. He had tried to extract it from solutions with ethyl acetate, and entirely failed to remove the precipitate. As far as his experience went, he thought that the commercial article at present on the market corresponded pretty well with the authors' results.

Mr. HAMPSHIRE asked the authors whether during the preparation of these salts they got any evidence of decomposition. Hydrolysis was a possible factor. He would also like to make a remark on how fortunate the Conference had been in securing this number of papers from 17 Bloomsbury Square. It was thought that as a result of the adsorption of the Conference to the Society there might be a larger number of papers coming along from institutions in which the Society was interested. Certainly 17 Bloomsbury Square was taking the lead in a very businesslike manner.

Mr. CORFIELD, replying, said that all the acid that was used in these experiments was re-crystallised twice, and its purity was confirmed first of all by examination for chlorine. So far as these experiments are concerned, the authors' object was to ascertain whether these hippurates were normal or acid hippurates, and for that purpose their material was sufficiently pure. The quantity of the free acid present would depend upon the method of preparation. Everyone knew that these substances, when obtained in the solid condition, lose ammonia and contain a slight excess of acid. The potassium salt they had not often met with; it was a very deliquescent substance. They were interested in chemistry in their laboratories; they tried to do as much useful work as possible; and in all this work they had encouragement from the Council and from the school authorities.

The CHAIRMAN remarked that congratulations were due to the Conference and to the Society, and they must also congratulate Mr. Corfield on the result of the year's work.

The next paper was:—

Pharmaceutical Preparations: A Plea for International Uniformity

By VICTOR COFMAN, B.Sc.

[ABSTRACT]

The subject dealt with in this introductory paper has behind it a long and complicated history. Very creditable efforts have been made by pharmacists and medical men of all countries to solve what has always been regarded as an important problem. I do not wish to enlarge here on the historical part, which has been given elsewhere. Enough to say that every one of the International Pharmaceutical Congresses has discussed this matter. A Universal Pharmacopoeia was first suggested in Italy in 1846; then came the pioneer work of the Paris Society of Pharmacists, followed by the draft Pharmacopoeia of Professor Waldheim. Next, with the help of the Belgian Academy of Science, the Brussels Conference was convened and gave the first tangible results. At the last few Congresses Professors Remington (Philadelphia) and Tschirch (Berne) have constantly drawn attention to the need for further action. The progress made has been slow, and, as may be seen from the communications that follow, there is yet a great diversity in the formulas of some of the potent preparations. It remains to examine the difficulties which our predecessors have encountered in their arduous task and see whether we are at present more favourably placed to bring the enterprise to a successful issue. Considering

the subject in its broadest aspect, two distinct phases are seen to be involved :—

- (i.) Pharmacists, medical men, and chemists must come to an agreement regarding the most suitable formulas and methods of analysis.
- (ii.) The methods and formulas, once worked out, should receive official recognition in all countries.

The first step would appear to be the more difficult one, but a study of the subject shows that in the past insuccess was largely due to the inertia of the governments and the slowness of the diplomatic machinery through which everything had to be done. This point is illustrated by the International Agreement of 1906. Its origin dates back to the London Congress of 1881, but it was only after reiterated requests, and at the instance of the Brussels Academy of Science in 1898, that the Belgian Government, through diplomatic channels, asked the chief Powers to convene a Conference. The Conference met four years later to draw up a convention, and another four years elapsed before the protocol was finally ratified in 1906. We are now, happily, in a more fortunate position. There exists at present an international organism that can serve as intermediary between the competent scientific bodies and the various governments. This new institution is the Health Department of the League of Nations, which has already done valuable work in connection with the standardisation of vaccines and serums. It may be assumed that once doctors and pharmacists are agreed among themselves, this Department will undertake to communicate with the governments concerned and render effective their decisions. History has its lessons, and, while rejoicing at the achievements of the Brussels Conference, we must not overlook its shortcomings or fail to draw benefit from previous failures :—(1) The pioneers of the movement tried to obtain at a stroke a Universal Pharmacopœia without realising the magnitude of the undertaking; let us be moderate and restrict our scheme of unification at the beginning to a few selected preparations. (2) The Brussels Conference, in spite of having been so long delayed, did not possess all the necessary information for its work, and some of its decisions have not been accepted or have been modified since; it is therefore imperative to see that on a future occasion all the information needed in order to arrive at a satisfactory agreement shall be at hand when required. (3) One of the weak points of previous attempts was that the large amount of labour indispensable for the purpose of unification was placed on the shoulders of men most eminent in the field of pharmaceuticals, but whose time was already taken up by other responsible duties. This should be then our immediate aim : to stimulate research that will lead to the finding of suitable international standards in pharmacy, and to bring together on common ground the competent bodies interested in this pursuit, e.g., the International Pharmaceutical Federation, the Health Department of the League of Nations, the International Union of Pure and Applied Chemistry, etc. The monographs which are being presented to this Conference will serve to illustrate the methods of arranging the available data. Each paper deals, from an international point of view, with a given drug, particular attention being paid to the differences in the formulas of various pharmacopœias. The purpose of these monographs is to bring together the salient facts necessary to form an opinion of the relative value of the formulas in use. If only the faculties and schools of pharmacy in every country would give as subjects for theses to their advanced students one or two of the more important drugs to be described in the same way, we should have in a very short time all the information necessary in order to bring about uniformity in pharmaceutical preparations all over the world. I must express my gratitude to the authors of the monographs, who have sacrificed their valuable time to this exacting work, and to Misses L. W. Wells, J. K. Midlane, and Messrs. Bateson and Pinkus for help in looking up the literature. My thanks are also due to Miss Snellus and Messrs. C. W. Gosling, H. Lucas, C. Morton and P. H. Woodnoth, who, while not able to complete their monographs in time for this Conference, will, I trust, eventually publish them.

DISCUSSION

Professor VAN ITALLIE, speaking in excellent English, said that he had been much interested in this and the subsequent papers on international standardisation, which he had seen in type. The International Federation had approached the Belgian Government with a request for convoking a conference on this subject in Brussels. No reply had been received, but as a matter of courtesy it had been decided by the Federation to wait three months longer. If by then no answer was forthcoming, another government or the Health Department of the League of Nations would be approached. Much had been written on the general question, and the suggestion of Mr. Cofman should be followed up.

The CHAIRMAN suggested that in this country our tendency was conservative, and that we were apt to undervalue the necessity for international standardisation. There must be a reason for the fact that so small an effect had resulted from so much work in this direction. Any international pharmacopœia agreed upon could only be of a limited order. We all knew how difficult it was, in England, to get pharmacists, doctors and analysts in agreement; and it followed that papers of this kind aimed at a very difficult ideal. Probably the requirements of by far the greater number of English prescriptions abroad would not be met by an international pharmacopœia. English people were perhaps not the best judges of this question: we should not stand in the way, but should fall into line. The next move should come from a Government interested. Mr. Cofman and the authors of the succeeding papers had taken a useful initial step.

The next papers were :—

International Standardisation of Cinchona and its Preparations

By C. T. BENNETT, B.Sc., F.I.C., F.C.S., Ph.C.

[ABSTRACT]

THE author states that it is highly desirable that an international standard should be adopted for such an important drug as cinchona bark and its chief preparations. Proposing to deal with the methods of assay and comparison of the various formulas of the preparations, he first gives a short historical account of the drug, together with details regarding its habitat and cultivation. Pointing out that revision of standards has not followed on the same lines in different countries, the author then contrasts the requirements in successive issues of the British and other pharmacopœias. For example, whereas the process of assay in the present British Pharmacopœia is substantially the same as that official in the 1898 edition, the United States Pharmacopœia has discarded previous attempts to differentiate between the important and less important alkaloids, whilst the latest edition of the French Codex requires the determination of crystallisable sulphate of quinine. Tables are also given showing the standards adopted for the various cinchona barks, the liquid extracts, solid extracts and tinctures official in the various pharmacopœias of the world. The chief varieties of barks of the present day in commerce, he says, are the following :—1. Crown bark from *Cinchona officinalis*; 2. Red bark from *Cinchona succirubra*; 3. Colombian bark from *C. pitayensis*, *C. lancifolia*, and *C. cordifolia*; 4. Grey bark from *C. nitida*, *C. micrantha*, and *C. Peruviana*; 5. Yellow bark from *C. calisaya* and *C. Ledgeriana*. The bark sold in Amsterdam comes almost exclusively from Java, that sold in London from India, Ceylon, and South America. Manufacturers' bark is sold entirely on chemical analysis by Dutch chemists, who usually give the percentage of total alkaloids and the percentage of crystalline quinine sulphate. The actual method employed by them for the assay of cinchona bark does not, however, appear to be published. The species from which the bark is obtained appears to be of minor importance, since it is chiefly employed in the manufacture of quinine salts. *Cinchona Ledgeriana* bark is said sometimes to contain as much as 11 per cent. of quinine, whilst *C. officinalis*, *calisaya*, *succirubra* contain usually from 2 to 5 per cent. On the average Java cinchona bark yields 5 to 7 per cent. of

quinine sulphate. The estimation of the quinine content of the bark would be most desirable if a satisfactory process were available, and the following process has been suggested. It was tested by Auermuller in the laboratory of the Berne Pharmaceutical Institute (Year Book of Pharmacy, 1921, p. 248), and is a modification of Frommes' method:—

Heat 2 gm. of the bark in a 200 c.c. bottle with 5 c.c. dilute hydrochloric acid and 17 c.c. water in a water-bath for 15 minutes. Cool, add 50 gm. ether and 25 gm. chloroform. Shake, add 4 gm. solution of caustic soda (30 per cent.), shake continuously and vigorously for ten minutes, add 2 gm. of powdered tragacanth, and shake again. Set aside for five minutes, pour off 60 gm. of the clear ethereal solution into a flask and distil to dryness. Pour 5, 5 and 5 c.c. of ether on the residue, evaporating to dryness after each addition. Dissolve in 10 c.c. warm absolute alcohol, add 3 drops solution hematoxylin, and 10 c.c. water, and titrate with N/10 hydrochloric acid to a reddish-brown colour. Add 30 c.c. water and titrate to lemon yellow. Each c.c. of N/10 acid corresponds to 0.0304 gm. of alkaloids. The same method may be adapted to the liquid extract and tincture. For the liquid extract 2.5 gm. are taken, 8 gm. of water, 2 gm. dilute hydrochloric acid, followed by 2 gm. solution of soda and 3 gm. of tragacanth. For the tincture 50 gm. are evaporated to 10 gm. and shaken with 5 gm. dilute hydrochloric acid, 50 gm. ether, 25 gm. chloroform, and 4 gm. solution of soda.

This process has the advantage of being comparatively simple, rapid, and, since the alkaloids are titrated, the results are more reliable than a gravimetric determination. The alkaloids extracted by various solvents always contain a considerable quantity of colouring matter and impurities. Results of tests carried out under the author's supervision are compared with the methods official in the British Pharmacopœia and the United States Pharmacopœia as follows:—

Experiments on Powdered Bark.—1. B.P. method: Total crude alkaloids, 5.57 per cent. Quinine and cinchonidine, 2.58 per cent. Other alkaloids reprecipitated and extracted with ether, 2.30 per cent. 2. U.S.P. method: Total alkaloids, 7.35 per cent. by weight. By titration, 5.51 per cent. 3. Proposed International method: Total alkaloids, by weight, 8.55 per cent. Total alkaloids, by titration, 5.77 per cent.

These results indicate that the proposed international method appears to extract the alkaloids well, and the amount shown by titration is slightly higher than the weight of crude alkaloids extracted by the B.P. method from the same bark. The U.S.P. process extracts more alkaloid than the B.P. method, but titration indicates a much lower percentage.

Experiments on a Liquid Extract.—B.P. method: 5.08 per cent. total alkaloids by weight, 4.39 per cent. total alkaloids by titration. Proposed International method: 5.60 per cent. total alkaloids by weight, 4.87 per cent. total alkaloids by titration.

The use of the hematoxylin indicator requires a little practice, but a good end point can be obtained by direct titration. By adding excess of acid and back titrating, good results could not be obtained. With regard to liquid extract of cinchona, B.P., the author contrasted the formulas in the 1867, 1885 and 1898 pharmacopœias and the methods of standardisation, reviewing the work which had been carried out in various countries concerning the extraction of alkaloids, and stating that, in his own experience, the B.P. process is by no means satisfactory, the proportion of alkaloids extracted being considerably less than is shown by assays of the bark. On the manufacturing scale a No. 60 powder is too fine, as the percolator soon becomes blocked, and a coarser powder is never completely exhausted. Quite recently Scoville ("Journal American Pharmaceutical Association, February, 1923, p. 104) advocated 2.5 to 3 per cent. of hydrochloric acid in the first 100 c.c. of menstruum for 100 gm. of the drug. R. H. Langton, in a recent letter to "The Pharmaceutical Journal" (April 7, p. 333), showed that percolation with alcohol, 8 parts, and glycerin, 1 part, continuing with 80 per cent. alcohol, fully extracts the alkaloids without the addition of hydrochloric acid, while by the B.P. method less than half the quantity of alkaloid was extracted.

In conclusion, as a result of a survey of the whole subject, the following suggestions are offered for consideration by an International Pharmacopœia Committee:—1. The bark should be standardised for total alkaloids by titration, and the limits fixed for galenical preparations should be from 6 to 8 per cent. of total alkaloids by titration, bark of this strength being usually available. The International assay process recommended above should be adopted. 2. A liquid extract should be prepared by percolation with 70 per cent. alcohol, hydrochloric acid and glycerin being added to the concentrated extract to increase the solubility and prevent precipitation. The finished product should be standardised to contain 5 per cent. alkaloids by titration. 3. A simple tincture should be prepared, 1 in 5, with 70 per cent. alcohol, and standardised to contain 1 per cent. of alkaloids by titration. 4. A compound tincture should be prepared from a formula either on the lines of the British Pharmacopœia or with gentian root in place of serpentaria as adopted by several of the other pharmacopœias. The adoption of 70 per cent. alcohol has proved satisfactory, and the use of the simple tincture in place of the bark would save the necessity of separate standardisation for the compound tincture. 5. A solid extract prepared with alcohol (70 per cent.) and standardised to contain 10-12 per cent. total alkaloids by titration could be adopted if thought desirable. 6. A wine prepared as at present official in the French "Codex," but using the standardised fluid extract in place of the bark, might be included unless the paragraph (a), Article 2 of the International Agreement is considered to apply. This states that "No potent drug shall be directed to be prepared in the form of a medicinal wine."

The author thanks Mr. V. Cofman and Mrs. Shaw for their valuable assistance in compiling the tables, and Mr. F. R. Bateson for his useful references.

International Standardisation of Belladonna and its Preparations: With some Notes on other Solanaceous Drugs

By A. J. JONES.

[ABSTRACT]

IN his introduction the author shows first the desirability of considering the solanaceous drugs as entities in themselves, and not as mere vehicles for the alkaloid hyoscyamine or atropine. For example, it is not necessarily the absolute effect of an isolated principle that gives the key to the behaviour of a drug. In this connection it is worth noting how limited is the employment of stramonium; and the persistent use that physicians make of hyoscyamus as distinct from belladonna, the clinical effects of which are asserted to be quite different. The alkaloids are quite similar in these drugs, therefore this difference must be due either to the relatively high dose of hyoscyamus extractive that is administered with the corresponding dose of alkaloid, or else there must be some unknown difference in the composition of this extractive. There are undoubtedly bases and split products present in belladonna and hyoscyamus which have not yet been defined and whose physiological effects are unknown. The argument to be deduced is that galenicals of indefinite natural bodies which have achieved a thoroughly established place in clinical medicine should not be interfered with in any matter that may be fundamental to their composition. But if there is reliable evidence to show that the vogue of a drug is only due to custom or habit among prescribers, and if its value is strictly measured by a specific alkaloidal content, then there can be no imperative reason for standardising methods of manufacture or even for restricting the drug used to a single variety.

These points are most important, and demand full consideration before anything can be done in suggesting universal formulas, because allied drugs are to be found in different countries and in general commerce, which find their way into preparations bearing other names, as adjunctives to the alkaloidal strength. For example, the so-called Indian and Japanese belladonna and Egyptian henbane may occur in preparations ostensibly of the official solanaceous drugs. This is admittedly the case

America for plasters, and the Japanese Pharmacopœia employs scopolia in all cases where we use belladonna, but is a point of some note that hyoscyamus is retained. A question for consideration is whether these similar alkaloidal drugs should receive official recognition, so that they could be used openly in their proper place, rather than be administered unwittingly as adulterants. The author then goes on to a detailed consideration of the crude drug belladonna itself, adulterants of the leaves of which the following are mentioned:—*Phytolacca scandra*, *Ailanthus glandulosa*, *Scopola atropoides*, *Scopola carniolica*, *Solanandra longiflora*, *Carpinus betulus*, *Solanum nigrum*, *Solanum carolinense*, *Hyoscyamus muticus*, and of the root as follows:—*Pokeroot*, *Rumex crispus* scopolia (as a substitute). The characters of the leaf, herb, and root are also dealt with, and the analytical details.

THE GALENICAL PREPARATIONS

The galenicals of belladonna as they have occurred in British pharmacy are essentially represented by three types of preparations; there are:—(1) Juice or aqueous extractions of the leaf or herb; (2) alcoholic extractions of the leaf or herb; (3) alcoholic extractions of the root. A table is given showing the developments and changes that have taken place since the London Pharmacopœia 1809 to the B.P. 1914. The transference of all the essential preparations (with the single exception of the green extract) to root extractives in 1898 followed the recommendations of Barclay and other workers about this time, who endeavoured to produce extracts very strong in alkaloid, such as from 2 to 4 per cent., which could not easily be obtained from the leaf. The question of any possible variation in therapeutic properties resulting from such a change was not considered. It has been shown by Farr and Wright that almost identical yields of alkaloid from the same specimen of drug may be obtained by extracting with alcohol varying from 80 per cent. to 40 per cent. in strength. The main difference is in the extractive, where 60 per cent. alcohol gives a somewhat lower yield and is practically identical with 0 per cent. and 40 per cent. These authors conclude that simple maceration gives the least satisfactory results, but that macero-percolation or continuous percolation leave little for choice between them. They show in another paper that the juice extracts of belladonna yield from 1 to 54 per cent. of dry matter extractable by alcohol. They also express the opinion that alcoholic extracts of the leaf are preferable to juice extracts. The author then goes on to discuss the individual preparations. The juice extracts were official in the U.S.P. from 1823 to 1873 inclusive, and were comparable with the British preparations. The trend is to discard this extract in favour of the soft alcoholic extract of the leaf, but there is variation from unstandardised preparations to those containing 0.5 to 1.5 per cent. of alkaloid. The B.P. adopts a dry powdered extract set at 1.0 per cent. The question of retaining an official soft extract is well worth consideration. The old green extract still finds very extensive use in this country for glycerinum belladonnæ, and it is well worth replacing by a controlled preparation. Special consideration ought to be given to the means of adjustment of strength in soft extracts. The German and U.S. Pharmacopœias employ liquorice extract and glucose respectively; but liquorice readily allows substitution in part by glucose, and both formulas leave openings for considerable adulteration by analogous solanaceous extracts. The employment of powdered leaf as a diluent for the soft, as well as the hard extract, is worth attention. Analytical checks on the actual composition of extractive matter are urgently needed if preparations true to name are to be maintained. The Dutch Pharmacopœia seems to recognise this to some extent, and endeavours to characterise belladonna by the fluorescence test, thus distinguishing hyoscyamus. With regard to tinctures, uniformity could be attained without much interference by standardising a tincture made with 70 per cent. alcohol and containing 0.03 to 0.035 per cent. of alkaloid. The U.S.P. has lowered its present standard of 0.03 per cent. from the previous one of 0.035 per cent. Alcoholic liquid extracts of the root are official in the B.P. and U.S.P. only. The alkaloid content is set as follows:—

B.P., 0.75 per cent. (w/v), with permissible deviation of 0.05 per cent.; U.S.P., 0.45 per cent. (w/v), with permissible deviation of 0.045 per cent. Glycerin of belladonna is official only in the Portuguese Pharmacopœia. The processes of the German, French, United States, and British Pharmacopœias are criticised, and the author states, with regard to the last-named, the B.P. prescribes thirty minutes' drying, which process is open to question, because heating these alkaloids with water derived from the wet chloroform is almost sure to cause slight decomposition. If taking to dryness is to be adopted, it is preferable just to dissipate the main solvent and, without waiting for the water to disappear, treat with absolute alcohol and evaporate to dryness, repeating once or twice more, and leave on the water bath finally for about ten minutes. If greater precision than this is required, there is a clear case for the investigation called for in the B.P.C. research list, namely, a method for the isolation and direct determination of atropine and hyoscyamine to the exclusion of other bases. The B.P. does not demand identification of the alkaloidal residue.

EXTRACTION OF ALKALOIDS

Methods proposed for obtaining the alkaloids from either the powdered drug or its extracts have involved extraction from simple alcohol, with alcohol and chloroform in a Soxhlet apparatus, digestion with acidulated water, and shaking with comparative large quantities of ethereal solvent and rather small quantities of aqueous alkali, such as in the Keller method and its modifications. This latter method seems to be by far the most popular. Two variations are followed: the total solvent and the aliquot part may be taken either by weight or by volume. With volume it is essential that the temperature at which each volume is taken should be the same. This type of method is used in the U.S., German, Dutch, and Japanese Pharmacopœias and others. In some assays of the extract this is treated directly with the ethereal solvent and the aqueous alkali, as in the Keller method of the crude drug, and necessitates transfer of the alkaloid to acidulated water, and thence to chloroform. Such a method usually yields a very clean alkaloid. The Dutch Pharmacopœia affords a different example. An acidulated aqueous extract of the preparation is filtered, an aliquot part of this is treated with ammonia and ether, shaken with tragacanth to clarify, and an aliquot of the ether taken, which is evaporated to dryness and the residue titrated. In deciding upon the relative merits of two such methods regard must be taken of the nature of the extract to be assayed. Further comparisons were made between the plasters of the various pharmacopœias, the liniments, and the ointments (suppositories are official in the B.P. only), before passing on to a consideration of

THE ASSAY PROCESSES.

The principle for the assay which has been almost universally adopted is that of obtaining the free bases by means of immiscible solvents, and determining their alkalinity, this value being then expressed in terms of atropine. The assay is not a chemically exact process. Actually what is done is to extract such bases as are soluble in the given solvent and under the conditions of experiment employed. Thus, with ether all the ether-soluble bases are extracted, and similarly with chloroform; but it does not follow that these are exclusively mydriatic bases, and the gross amount obtained might also vary with the amount of solvent employed, if other less soluble bases are present. Manufacturers of the alkaloid find that the yield of hyoscyamine (from *Hyoscyamus muticus*) generally falls well below the titration value of the usual assay. These doubtful points, however, do not detract from the value of the assay; for the drugs have a certain natural constancy in their active principles and associates, the greater part of which we know to be hyoscyamine, and the whole object of pharmaceutical standardisation is to retain these principles within fixed limits. But they do indicate the desirability of a uniform technique. A rapid method of assay has been adopted in the Japanese Pharmacopœia for the scopolia preparations. The possibilities of discrepancies in the hyoscyamus-bearing drugs, arising from time of contact with alkali and from the different alkalis used to liberate

the base, has been observed by D. B. Dott, who finds sodium bicarbonate less likely than ammonia to cause decomposition.

METHOD OF TITRATION

The most usual method of titration is to take up the alkaloidal residue in a little strong alcohol, add standard acid and back titrate with alkali. The only point to emphasise is the necessity of using alcohol for solution of the residue before adding the acid. Two other methods are criticised and objections to them shown. The author disposes of objections to such indicators as iodosine hæmatoxylin and cochineal in favour of new sulphophthalein indicators by pointing out that, so long as an indicator is reasonably near the truth, it is better to have a small inaccuracy, but a definite and constant result, rather than to attempt extreme accuracy and obtain somewhat variable results owing to the personal equation when deciding the colorimetric Ph. In addition to titrating the alkaloid, the Japanese, German, Netherlands, and Norwegian Pharmacopœias require the residue to respond to Vitali's test. In dealing with the tincture of belladonna and extract of hyoscyamus, this test, when applied to a sufficiently small quantity, appears to take the place of standardisation in the Netherlands Pharmacopœia. The Japanese Pharmacopœia requires extracts to be ashed, and the ash to show negligible quantities of heavy metal. Many commercial preparations would fail to respond to this test, since they are contaminated with copper from the evaporating pans. At the same time, copper is a natural constituent of plant ash, so that discrimination would have to be used in establishing such a test. The final point for consideration is the fixing of standards and permissible deviations. These deviations are certainly necessary, and it is useless to expect smooth working without them, but it is a question whether the desired standard should not be made the lower limit and deviation in excess of the standard specified. This would probably lead to greater uniformity in manufacture. In conclusion, the author thanked Miss J. K. Midlane for much work in making extracts from different pharmacopœias, and Mr. V. Cofman for supplying digests of papers that were only available in London.

The International Standardisation of Opium and its Preparations

By H. B. STEVENS, O.B.E., F.I.C., F.C.S.

THE author in his introduction refers to the antiquity of the use of opium as a medicine and points out that it was one of the first to be assayed, a method being given in the B.P. of 1864. An important change in the history of opium was the signing of "The International Agreement respecting the unification of the Pharmacopœial Formulas for Potent Drugs," which took place at Brussels on November 29, 1905. The signatories were: Great Britain, Germany, Austria and Hungary, Belgium, Bulgaria, Denmark, Spain, United States of America, France, Greece, Italy, Grand Duchy of Luxemburg, Norway, Netherlands, Russia, Serbia, Sweden, and Switzerland. The rest of the paper is a compilation of tables indicating how far the pharmacopœias of the various countries are in line with the recommendations of the agreement, which were as follows:—

Pulvis opii to contain 10 per cent. morphine when dried at 60° C.

Extractum opii to contain 20 per cent. morphine.

Tinctura opii to be 1 in 10 of opium and 70 per cent. alcohol.

To contain 1 per cent. morphine.

Tinctura opii benzoica to contain 0.05 per cent. morphine.

Tinctura opii crocata to contain 1 per cent. morphine.

Pulvis opii et ipecacuanhæ compositus to contain 10 per cent. pulvis opii (1 per cent. morphine).

The official methods of determination are also given of the following countries: France, Germany and Italy, Great Britain, Japan, Switzerland and the United States. The following table shows the variation in regard to pulv. opii:—

PULV. OPII

Pharmacopœia	Temp. of drying	Percentage	Morphine	
			Crystalline or Anhydrous	Estimation
Austria, 1906*	Below 60°	not exceed 12	Crystalline	Gravimetric
Belgium, 1906	Below 60°	10	Crystalline	Gravimetric
Denmark, 1907	Below 60°	9.5–10.5	Anhydrous	Volumetric
France, 1908	At 60°	10–11	Crystalline	Gravimetric
Germany, 1910	Below 60°	10	Anhydrous	Volumetric
Great Britain, 1914	At 60°	9.5–10.5	Anhydrous	Volumetric
Holland, 1906	Below 60°	10	Anhydrous	Volumetric
Hungary, 1909	Below 60°	10	Crystalline	Gravimetric
Italy, 1920	At 60°	10	Crystalline	Gravimetric
Japan, 1922	Below 60°	10	Anhydrous	Volumetric
Norway, 1913	Below 60°	9.5–10.5	Anhydrous	Volumetric
Russia, 1910	Below 60°	10	Crystalline	Gravimetric
Spain, 1906	At 60°	10	Crystalline	Gravimetric
Sweden, 1908	Below 60°	10	Anhydrous	Volumetric
Switzerland, 1907	50°, 60°	10	Anhydrous	Volumetric
United States, 1916	At 70°	10–10.5	Anhydrous	Volumetric

* The Austrian Government reserved the right of permitting the sale of Pulvis Opii containing a maximum of 12 per cent. of morphine.

Extractum opii (probably the earliest preparation of opium) is dealt with in the same manner. There is a fair amount of agreement in this preparation. In Denmark it is not official. In all the other pharmacopœias aqueous menstruum is used to prepare a dry extract. The diluent is sugar of milk, except in U.S. (starch), Austria (gum acacia) and Great Britain (calcium phosphate). The percentage of morphine is 20 per cent., except Norway (18 to 20 per cent.), Sweden (19 to 20 per cent.). The percentage of morphine in tincture of opium is 1 per cent., except Norway (0.95 to 1.05 per cent.). The menstruum varies from 30 per cent. vol. alcohol to 70 per cent. Tinct. opii benzoica has a percentage of morphine of 0.05, except in U.S. (0.04 per cent.). The following are not standardised: French, United States, Russian, Japanese. The preparation is not official in Austria, Hungary or Spain. The original tinctura opii crocata appeared in Dr. Sydenham's "Opera Universa," 1726, as *Laudanum Liquidum Sydenhami*, the formula being given as: Opium, 2 oz.; saffron, 1 oz.; cinnamon and cloves, of each 1 dram; Spanish wine, 1 lb. Digest in a water-bath for three or four days, then decant the anodyne. This formula appeared officially as *Tinctura Anodynævel Laudanum Liquidum Sydenhami* in the Pharmacopœia Leidensis, 1732. It is not official in France, Great Britain, Japan or United States. The percentage in the various other pharmacopœias is universally 1 per cent., generally standardised on completion. The exceptions are Spain and Sweden. With regard to pulvis opii et ipecacuanhæ compositus, the author gives the original formula and a subsequent modification, followed by the tabulated requires of the modern pharmacopœias. The percentage of morphine throughout is 1 per cent. except in the Austrian pharmacopœia, where it is 1.2 per cent. The diluents vary considerably. In his conclusion the author points out that the tables are not complete, as several countries have not issued a new edition of the pharmacopœia since 1902, also one or two were not available for reference. But an examination of those given is sufficient proof of the good work done in the direction of unanimity of the strengths of opium preparations: Much yet remains to be done, and it is to be hoped that a further conference or conferences will result in identical formulas and methods of estimation being adopted by all the principal countries. The following suggestions are made: (1) That all preparations of opium be determined on the basis of anhydrous morphine by the volumetric method. (2) That a careful examination be carried out, under the auspices of the League of Nations, of the various official and unofficial methods of determination, and the best method adopted. (3) *Extractum opii* should contain 20 per cent. anhydrous morphine, sugar of milk being used where a diluent is necessary. (4) *Tinctura opii* should be of a lower alcoholic strength, e.g., 45 per cent., 70 per cent. being unnecessarily high. (5) *Tinctura opii benzoica* should be made with the standardised tincture of opium, thus rendering further standardisation unnecessary—e.g., benzoic acid, 5; camphor, 3; oil of

nise, 3; tinctura of opium, 50; 60 per cent. alcohol to 1000. (6) *Tinctura opii crocata* should be made with the standardised tincture of opium for the same reason—g., cinnamon, 10; cloves, 10; saffron, 50; tincture of opium to 1,000. (7) *Pulvis opii et ipecacuanhae compositus* should be made as follows: Powdered opium, 10 parts; ipecacuanha root, 10 parts; milk sugar, 80 parts. Messrs. V. Cofman, B.Sc., and C. E. Leslie Lucas, A.R.C.S., are thanked for their valuable assistance in extracting data from various pharmacopœias.

These papers having been presented in brief abstracts by their authors, the chairman announced that the remaining two papers bearing on standardisation would be taken as read. These were:—

“The International Standardisation of Colchicum Preparations,” by Miss E. S. Hooper, B.Sc., F.I.C., Ph.C., and Miss K. M. King, and “The International Standardisation of Quillaia Preparations,” by J. Cofman-Nicoresti and Snow B. Tallantyre, B.Sc., F.I.C.

DISCUSSION

The CHAIRMAN, in opening a discussion on the last five papers, pointed out that a tremendous amount of time must have been spent by the authors in “digging out” the particulars from various pharmacopœias. The work must have been informing to the authors, and would repay study.

Professor GREENISH said it was not quite clear whether it would be best to aim at a small international pharmacopœia or at an improvement on the Brussels agreement of 1903-06. The agreement had worked very well. He feared it was going to be a very lengthy business, in view of the number of bodies interested. Great Britain had departed in the case of nux vomica from the Brussels standard by advocating a strychnine basis of standardisation, and this was only one instance. When the various countries had agreed on strengths, the matter would have to be submitted to their respective Governments, and in our own case to the General Medical Council. It was difficult to see how the Health Department of the League of Nations could help unless it could induce the General Medical Council to accept its conclusions. The first step might possibly be a revision of the Brussels conclusions, and the next the addition of other toxic drugs. There was tedious spade work to be done before the results could be brought before any international conference.

Mr. J. RUTHERFORD HILL pointed out that one important matter, in its own way, was the question of percentages. In the Hague Convention there was no indication as to what was intended, and it was as well to have an understanding whether weight in weight or weight in volume was to be adopted.

Mr. FARR believed that standardisation on a minimum percentage was undesirable, and that the adoption of a middle basis was preferable.

Mr. SAGE remarked that the United States Pharmacopœia had published a Spanish edition. Why should not the British Pharmacopœia be published in some other language?

Mr. H. M. LLOYD was of opinion that with earnest collaboration we could have an international pharmacopœia in five years. Such a work would obviate much trouble to those who travel.

Mr. R. WRIGHT, who was warmly received, said that he hoped to see an international pharmacopœia come about. There were grave disabilities in the varying strengths of many potent substances. Difficulties could not be ignored, but the advantages of uniformity were so manifest that efforts should be made. The League of Nations suggested itself to most of them. All that was needed was that the matter should be taken in hand by men who were determined that something should be done.

Mr. COFMAN, replying to the discussion, said that at Brussels an agreement on potent preparations was reached in three days. He feared that with Governments to conciliate the work might take ten years or more, but with the League of Nations taking charge of the matter, everything might be settled in a few days—(laughter)—or at any rate within two years.

The CHAIRMAN then declared the business of the session closed.

Closing Session

The closing session of the Conference was held in the Wharnclyffe Room at 2.30 on Wednesday. Without preamble, the chairman called on Mr. H. Humphreys Jones to move that the following be elected officers of the Conference for the ensuing year:—

President.—The President of the Pharmaceutical Society.

Chairman.—Edmund White.

Treasurer.—D. Lloyd Howard.

General Secretaries.—C. H. Hampshire, F. W. Crossley-Holland.

Other Members of Executive Committee.—The President of the Pharmaceutical Society of Ireland (*ex officio*); the chairman of the North British Branch of the Pharmaceutical Society of Great Britain (*ex officio*); three members of the Council of the Pharmaceutical Society to be nominated by the Council; Messrs. R. R. Bennett, C. E. Corfield, H. Deane, N. Evers, H. Finnemore, B. F. Howard.

Mr. HUMPHREYS JONES (Liverpool) said it gave him very great pleasure to propose the election of the officers named. As for the President of the Pharmaceutical Society, Mr. Neathercoat had brought great distinction to the post, and a better man would be difficult to find. As an ordinary member of the Society he felt very proud of their President at the banquet the previous evening. He doubted whether there was anybody in pharmacy who had done more for the profession than the new chairman (Mr. White). He well remembered, some twenty-five years ago, when he began to study the “Pharmacopœia,” that he looked upon the author as something more than human—in fact, something in the nature of a prophet of the Old Testament. (Laughter.) Whenever he (the speaker) saw Mr. Lloyd Howard, who had acted as their treasurer for the last twelve years, he looked upon him as the embodiment of a perfect gentleman. (Applause.) Their friend, Mr. Hampshire, had been assistant secretary for some years, and was now promoted to chief secretary. He would be more particularly concerned with the scientific side. Dr. Crossley-Holland, who was unable to be present owing to pressure of professional duties, that day, would run the social side. Among other members of the Executive were Mr. Bennett, who had done an enormous amount of work for the Conference. He was senior secretary for three years and junior secretary for many years before. Mr. Evers had also done an enormous amount of work. Mr. Bernard Howard was a brother of their treasurer, and would be welcome.

Mr. BODY (Southend) seconded the adoption of these names, saying that duty was something in the nature of a punishment, as during his thirty years of pharmacy life he had just attended his first Conference. He was sorry they were losing Mr. Bennett, who had done so much for them, from the secretariatship.

Mr. E. WHITE replied on behalf of the newly-elected officers, remarking that it gave him pleasure to follow Mr. Gamble and to preside during the transition period. Mr. Bennett, who had been secretary for so many years, would be very much missed.

Mr. H. C. BROAD (Bath) extended a cordial invitation to the Conference to visit Bath in 1924. Bath, said Mr. Broad, was liberally endowed by nature with charms. It possessed architectural beauties, mineral-water springs and Roman baths. The pharmacists of Bath hoped to see members of the Conference as ambassadors to spread the fame of their city. The co-operation of the civic authorities had been enlisted, and there were ample hotel facilities.

Mr. D. J. WILLIAMS (Bath College of Pharmacy) supported the invitation. They felt diffident about inviting the Conference after the London meeting, but the Conference had visited Bath previously.

The PRESIDENT moved that the invitation be accepted. He did so, he said, with great pleasure. As had been said, the Conference met in Bath several years ago. [In 1888.—EDITOR.]

Mr. McMILLAN (Glasgow), in supporting the President's resolution, suggested that a visit of the Conference to Glasgow was overdue, the last date of a Conference held there being 1897.

Mr. BUTCHERS (Australia) said it was always a pleasant occasion after such a Conference to conclude with a

comprehensive vote of thanks. He wished to say, as a humble representative of Australia, how proud he was to have been there, and thus be able to meet brother pharmacists from all over the world. He was particularly pleased to witness so much good organisation in the Old Country in these days when it was accused of being slow. Everything in connection with the Conference had been managed in first-class style, and he would be enabled to take back to his colleagues many pleasant messages from Britain.

Dr. HOFMAN, speaking in fluent English, seconded the vote of thanks. He did so, he said, in the name of French, Spanish, Greek, Swedish, Belgian and Dutch pharmacists, who highly appreciated the graceful invitation of the Pharmaceutical Society and were astonished with the reception accorded them. They had an expression in Dutch, he said, derived from an English source—"Tip Top." (Laughter.) The meetings had been "tip-top," and the foreign delegates were glad to have assisted in them. There were now several lady pharmacists in Holland and it was almost a question when the last male pharmacist would disappear. (Laughter.) He thought that a special vote of thanks was due to the ladies of this Conference.

Mr. E. WHITE, after the chairman had added a word of praise to the committee, said in reply that the committee was very gratified with the vote of thanks; everything had gone as well as had been expected. Mr. Woolcock had done most of the work. Messrs. Bascombe, Gulliver, Tocher and Melhuish must also be mentioned, together with Miss Braithwaite.

Mr. J. RUTHERFORD HILL proposed a vote of thanks to the chairman in humorous terms, stating that some of his friends inclined at first to the belief that the whole thing was a bit of a "gamble"; but, owing to the fact that they had a "Gamble" at the head of affairs, the whole Conference had been a "dead cert." Mr. Gamble was the personification of tact and delicacy, and had set a high ideal for others to follow. One thing which struck him was that the chairman always showed a very full knowledge of all the subjects which had come up for discussion. (Applause.)

The motion was received with musical honours.

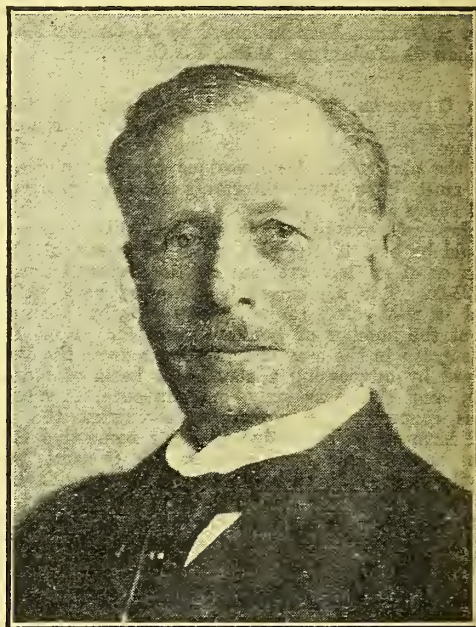
Mr. GAMBLE, in reply, thanked the gathering for the demonstration. Mr. Hill was far enough removed from the scene of activities not to appreciate as fully as himself that he had round him an Executive willing and anxious to make this first Conference a great success, an Executive tireless in doing whatever was possible and in inspiring him in every way. In returning thanks, he must not forget to mention that the President had naturally had a heavy share to take in everything. A big burden had been shouldered. The compliments he had received were not only personal, but he took them as an appreciation of the whole Conference arrangements. It had been quite an exceptional Conference, inasmuch as they had had many representatives from the Colonies and foreign countries. In that matter he wanted to urge that some way should be found of linking up with their friends in the International Conference and in the Colonies, so that their intercourse could be resumed in future years. He would therefore bring before the new Executive some plan to attain these ends. It had been a great honour and pleasure to do the work he had, and he was gratified at the way in which the vote had been received.

The proceedings then ended.

It is an axiom with organisers of social functions that the certain way to bring rain is to announce a garden party. The truth was again demonstrated on Wednesday, for while the luncheon was proceeding the rain began. As a consequence, only about two hundred braved the Botanic Gardens, and (rumour hath it) much disappointment was caused among the fair sex because of the lost opportunity for the display of some specially artistic frocks. The company present wandered through the palm courts, and took tea in relays in the marquee erected for the purpose. The irrepressible Cleworth managed to round up a small party and snap them in a bright moment.

The Social Side

Whatever truth there may be in Horace Walpole's reasons why the people of his age went to the opera—and it may be remembered that he voted the crush afterwards the great attraction—there can be no doubt that the reception given by the President, chairman and officers of the British Pharmaceutical Conference at the Hotel Great Central on the eve of the Conference was a function in which it was pleasurable to be aware of the full and slowly-moving tide of people well known in pharmacy. Due *clat* was imparted by the presence of the Lord Mayor (Alderman E. C. Moore), the Lady Mayoress, the Sheriffs (Mr. J. E. K. Studd and Mr.



Photo]

[Lafayette

The Right Hon. Edward Cecil Moore, the Lord Mayor of London, who was present at the reception on July 23.

S. H. M. Killik) and their wives. Receiving these and other distinguished guests were the President of the Conference and Mrs. Neathercoat, the chairman and Mrs. Gamble, and Mr. and Mrs. E. White. A small orchestra discoursed excellent music in the spacious winter garden to the general happiness of the throng; many reunions took place in the small circles that formed, dissolved and reformed; and before the evening was far advanced dancing commenced in the adjoining ballroom. The presence of our visitors from overseas was duly noted and appreciated, and linguistic difficulties proved not insuperable.

* * *

The delegates to the International Congress of Pharmacy who were present included:—

Professor Dr. L. van Itallie, M. J. Loisel, Dr. J. J. Hofman, Dr. A. Schamelhout and Madame Schamelhout, Mr. R. Pattou, Dr. A. Morales de las Pozas, M. A. Bouville, M. E. Collard, Professor Dr. E. Emmanuel and Mlle. Dambergis, Cav. F. Pratta, Dr. Cav. A. Robaldo, Mr. A. F. F. M. van den Dries, Professor V. van Itallie, Mr. J. Cofman-Nicoresi, Mr. Hilding Janzon, Mr. C. L. Butchers, M. A. Langrand and Mlle. Langrand, M. M. Lacroix, M. C. Rousseau, and Mr. Renato Mazloum.

Among Conference delegates and members we noticed Mr. J. Rutherford Hill, Mr. George Whitfield (Mayor of Scarborough), Mr. E. Saville Peck, Mr. H. Deane, Mr. J. Gilbert Jackson, Mr. William Kirkby, Mr. J. H.

Franklin, Mr. E. H. Simmons, Mr. A. J. Pidd, Mr. D. Dickson, Mr. T. Miller, Mr. John Cleworth, Mr. H. Antcliffe, Mr. S. F. Body, Mr. H. Finnemore, Mr. W. J. Egloz Woolcock, Mr. F. E. Bilson, Dr. Thomas Stephenson, Mr. A. W. Gerrard, Professor H. G. Greenish, Sir William Glyn-Jones, Mr. A. W. Ashcroft, Mr. F. A. Lawman, Miss Buchanan, Mr. J. P. Gilmour, Mr. Peter Irvine, Mr. J. P. Ellerington, Mr. Thomas Marns, Mr. C. A. Noble, Mr. William Chalmers, Mr. W. A. Whatmough, Mr. W. H. Saunders, Mr. W. B. Trick, Mr. A. Proctor Atkinson, Mr. A. R. Melhuish, Mr. Morley Taylor, Mr. E. S. Waring, Mr. R. Cecil Owen, Mr. A. H. Jenkin, Mr. D. Lloyd Howard, Mr. J. Milner, Mr. W. G. McNab, Mr. Victor Cofman, Mr. Jules Cofman-Nicoresti, Mr. Harry Martin, Mr. Harold Wyatt, Mr. E. H. Farr, Mr. R. Feaver Clarke, Mr. W. J. Williams, Mr. T. Edward Lescher, Mr. L. Moreton Parry, Mr. J. L. Hirst, Mr. G. A. Mallinson, and Mr. John Royle. In most cases the words "and Mrs." may be understood, ladies being well represented—and possibly forming the majority—among the 700 or more guests.

The point at which a dinner becomes a banquet has not been settled, but we may agree to accord the more pretentious title on this memorable occasion, if only because the Conference is the first of a new series—and is appropriately underlined as a jubilee meeting: The Winter Garden was crowded—and, indeed, overflowed—with delegates, not only from all parts of England, but from many European countries also, the foreigners attending the Conference incidentally and the International Pharmaceutical Federation primarily. A list of the visitors will duly appear in *THE CHEMIST AND DRUGGIST*, and the guests who occupied the top table were as follows:—

Mr. L. G. Brock, C.B., Sir E. Vincent Evans, LL.D., Lady Glyn-Jones, Sir Kingsley Wood, M.P., Sir William Glyn-Jones, Mr. A. Chaston Chapman, F.R.S., Sir Robert Robertson, F.R.S., Sir John Anderson, Sir Nestor Tirard, M.D., Sir Humphrey Rolleston (President of the Royal College of Physicians), Mr. E. White, Mr. H. J. Waring (Vice-Chancellor of the University of London), Major-General William Leishman, Mrs. Gamble, Viscount Leverhulme, the President of the Conference, Mr. W. C. Bridgeman (Home Secretary), Mrs. Neathercoat, Professor van Itallie, Mrs. E. White, Surgeon Vice-Admiral Sir Robert Hill, Mr. F. W. Gamble (Chairman of the Conference), Sir Herbert Creedy, Mr. H. S. Wellcome, Sir William Willcox, M.D., Sir Malcolm Delevingne, Sir William Tilden, F.R.S., the Mayor and Mayoress of St. Marylebone, Professor W. E. Dixon, F.R.S., the Rev. E. Hitchcock. On the opposite side:—Mr. C. H. Hampshire, Mr. Barton Hudson, Mr. H. J. Fisk, Mr. and Mrs. F. Ransom, Mr. and Mrs. F. E. Bilson, Mr. and Mrs. E. P. Sargeant, Mrs. Peck, Mr. D. Lloyd Howard, Miss Jackson, Dr. G. Claridge Druce, Dr. A. W. J. MacFadden, Dr. Smith Whittaker, Lieutenant-Colonel N. H. Mummery, Dr. F. J. H. Coutts, Mr. E. Saville Peck, Dr. A. Schamelhaut, Mr. C. A. Hill, M. R. Pattou, Mrs. Bennet, Mr. and Mrs. Herbert Skinner, Mr. and Mrs. G. Whitfield, Miss Whitfield, Mr. Hartland Swann, Dr. J. J. Hofman, Mrs. Woolcock, Mr. R. R. Bennett. The chair was occupied by Mr. E. T. Neathercoat, C.B.E., the Pharmaceutical Society's President.

After the loyal toast had been given by the chairman, the first of the remaining toasts—that of "The Pharmaceutical Society of Great Britain and its Conference"—was given by Sir John Anderson, K.C.B., the Under-Secretary of the Home Office. The speaker explained at the outset that he was filling a gap occasioned by the non-appearance of the Home Secretary (Rt. Hon. W. C. Bridgeman, M.P.) prevented from turning up by political duties. Sir John Anderson's name, it should be said, is known to pharmacists, because in 1916 he occupied the position of chairman to the Insurance Commission. He instanced the courtesy and valuable help he had received at the hands of many of the Society's officers, especially Messrs. Woolcock and White.

Mr. Neathercoat, in his reply, said that the Society's business was to protect the privileges of the qualified chemist, especially in these days, where such privileges were threatened. He alluded to the Society's work during the war: what the Society had done was done most loyally and willingly, and with a sense of privilege. He welcomed warmly the international delegates. As to the D.D.A. regulations, entire agreement had not always been reached between "my Society" and the Home Office. Mr. Gamble (who received an ovation) also replied in very brief terms. The object of the Conference—and he spoke mainly on its behalf, since Mr. Neathercoat had spoken chiefly for the Society—was twofold: it encouraged research and it offered opportunities for social intercourse.

Then followed the most interesting and entertaining speech of the evening, that of Lord Leverhulme, in proposing the toast of "The International Pharmaceutical Federation." His Lordship told three or four genuinely funny stories which were thoroughly enjoyed. He defended the apprenticeship system, and placed the greatest importance upon its value. He quoted a clever parody of his own on a well-known piece of moralising in verse, which declared that the twin elements of pharmacy—science and business—were not antagonistic. The chemist was expected to have encyclopædic knowledge. He was consulted on hundreds of subjects remote from pharmacy—even sometimes by those about to choose a matrimonial partner. Lord Leverhulme, in concluding, said that in order to assist in pharmaceutical education he desired to present three scholarships for poor students of £60 per annum, together with a medal (£10) and books (£10). The total income of £200 per annum would be derived from Lever's "B" Preference shares. (Loud and prolonged applause.)



Photo]

[Cleworth.

Ladies leaving Conference headquarters for Kew Gardens.

Professor Dr. van Itallie (President, *Fédération Internationale Pharmaceutique*) also replied (in English) as follows:—

It is difficult for me to find words suitable to express my sentiments, but I will do my best to reply to the friendly words which Lord Leverhulme used in speaking of our Federation, and the way in which his expressions are received by you. Even the weather has joined in welcoming us, as if to destroy the legend of "a London enveloped in fog and gloom." Our Federation is still in its infancy, and, indeed, its growth ceased entirely during the war. In fact, this meeting is the proof, but only of its resurrection; but, as I sincerely trust, its rebirth to a new and vigorous life of useful activity. Our organisation is not yet completed, and it is my hope that in the future our meetings will contribute materially to the advancement of pharmacy. It will be necessary to ensure in future that the reports are distributed to the delegates and members some time before the actual meeting, so that the contents can be studied at leisure. At this meeting the reports reached

as so late that I myself did not have occasion to study them nor to form any conclusions upon which to base the resolutions to place before the meeting. It was not possible to postpone the meeting, and under no circumstances did we intend to miss the unique occasion of the Diamond Jubilee of the British Pharmaceutical Conference. In expressing my very sincere thanks for the warm welcome you have extended to us, I seize this opportunity to offer to you my heartiest congratulations on the brilliant manner in which the Conference is celebrating the sixtieth anniversary of its foundation. It is one of the privileges of a great industrialist to aid in the advancement of all that makes life worth living, be it art or science. Lord Leverhulme is known for his noble conception of this privilege, to which he has just once more given practical expression.

Mr. Edmund White proposed in brief terms the remaining toast, that of "The Guests." Mr. H. J. Waring, Vice-Chancellor of the University of London, in the course of his reply controverted Lord Leverhulme's contention as to the great value of apprenticeship. It had its place, of course, but a pretty thorough general education in school should come first and apprenticeship be begun at a later date. He was all for extending the functions of the pharmacist. During the banquet Newman's Band performed a high-class programme of music; and the speeches were interspersed by songs sweetly rendered by Miss Olive Sturgess, who was encored on each occasion.

The outstanding feature of the Welsh concert at Queen's Hall on Wednesday evening was the superb playing of the now famous violinist, Miss Elsie Owen. In feeling and executive skill she is entitled to rank with the first violinists of the country. Especially beautiful was her rendering of the Pugnani-Kreisler "Prelude and Allegro," a piece marked by simple grandeur and a melodiousness almost stern. Without disparaging the other artists it may be said that she was easily the greatest of them all, and a brilliant future may safely be predicted for her. Miss Sara Melita has clearly undergone a long and careful training; she showed an astonishing mastery of technique, especially in the difficult aria of Verdi's, "Ah! Fors e lui," only less so than in the old favourite (now alas, too, too hackneyed), "Lo! Here the Gentle Lark." The flute obligato was not perhaps played too sympathetically, but Miss Melita's "handling" of the difficult passages was almost flawless. Very good, too, was the tenor, Mr. Walter Glynn, whose higher notes were markedly better than the lower, and who was rather wanting in conviction and dramatic vigour. But his voice is pleasing, and he acquitted himself well, especially in a very fine rendering of "O Lovely Night."

The Welshmen who organised this concert (whoever they were) might, perhaps, have taken the opportunity of vindicating the superiority of Welsh musical taste over English, Scotch or Irish; for some reason, however, they did not demonstrate the Welsh love of the greatest music. Few military bands, certainly, could have done better or have received a more generous welcome and appreciation—but the fault (if such it be) lies with the organisers in choosing brass where strings were more to be desired. Similar remarks apply to the Male Voice Choir. The most popular band items were the "Pilgrims' Chorus" from "Tannhauser" and a pot-pourri of international airs, a type of piece so popular at seaside resorts during the summer months. As to the London Welsh Male Choir it was clear that much preparation had gone to the rendering of Granville Bantock's "Kubla Khan," which was sung with emotional fervour and great expression—exaggerated, perhaps, in places.

A London programme-souvenir was distributed to the audience with a frontispiece portrait of H.R.H. the Prince of Wales, and each lady received in addition a fan. The girls who distributed the programmes were robed in the conventional Welsh costume.

Trade Report

42, Cannon Street, E.C.4, July 26.

THE continuance of the dock strike and the approaching holidays finds business in a very parlous condition in the produce markets. The effect of the strike is becoming more pronounced, particularly in foodstuffs, but crude drugs from the Port of London warehouses are obtainable just as usual, although imports and exports are temporarily held up. There is, however, no tendency to rise in prices as the strike comes at a dull period of the year: for one or two products, like Japanese refined camphor, a slight premium is paid when prompt delivery is wanted. It appears many vessels arriving at the port are unable to discharge their cargoes here, so they unload at Continental ports (particularly Hamburg and Rotterdam), the shipping company being protected by their bill of lading. Much confusion has arisen in the rubber and sugar markets as a result of the strike, owing to the impossibility of fulfilling contracts for August delivery, and there are likely to be many defaulters and arbitrations. Pending the auctions, changes in crude drugs have been practically nil. Cassia oil is slightly firmer. Menthol is practically unaltered, and mercury has an easier tendency. The position of fine chemicals is unchanged on the week, and the complaint of lack of business is very general. The home demand for heavy chemicals also continues very slow, and export business, although difficult, is as good as can be expected in view of the depreciated exchanges and the political situation on the Continent.

Higher	Firmer	Easier	Lower
Eucalyptus oil	Caraway oil	Aniline oil	Benzoin
Rubber	Dutch (August deliv.)	Citric acid	Benzol
	Cassia oil	Cocunut (desic.)	Ipecacuanha (M.G.)
	Zinc products	Menthol	Linseed oil
		Mercury	Palm oil
		Palm kernel oil	Petroleum
		Potass.	Sarsaparilla
	Steadier	permang.	(grey Jam.)
		Sarsaparilla	Sodium diethyl-
		(native Jam.)	barb.
	Hexamine	Shellac	

Cablegram

NEW YORK, July 24.—Business is dull. Bismuth salts have been advanced; subnitrate is now \$2.65, subgallate is \$2.51, and subcarbonate \$3.00 per lb. Cartagena ipecacuanha has advanced to \$1.75, balsam tolu to \$1.35 per lb., and Canada balsam to \$13 per American gallon. Menthol is lower at \$9.70; cascara sagrada is cheaper at 14c. and mercury is lower at \$65.50 per flask. Antipyrine has been reduced to \$2.80 per lb.

Exchange Rates on London

The following is a list of Continental and other exchange rates against the pound sterling on London prevailing at 4 p.m. on Wednesday:—

Place	Method of Quoting	Par of Ex-change	July 18	July 25
Amsterdam	Fl. to £	12.107	11.70—11.70½	11.69½—70½
Berlin	M to £	20.43	1,250—1,300,000	2,700—2,800,000
Brussels	Fr. to £	25.22½	95.00—95.10	94.30—94.40
Calcutta	Per rup.	24d.	16½d.—16½d.	16½d.—16½d.
Constantnple	Pst. to £	110	690—710	670—690
Greece	Dr. to £	25.22½	168—175	190—195
Italy	Lire to £	25.22½	106½—106½	105—105½
Lisbon	Escu.	53½d.	2½d.—2½d.	2½d.—2½d.
Madrid	Pts. to £	25.22½	32.17—32.20	32.20—32.24
Montreal	\$ to £	4.86½	4.71½—4.72	4.71½—4.71½
New York	\$ to £	4.86½	4.59—4.59½	4.59½—4.59½
Paris	Fr. to £	25.22½	78.25—78.35	77.60—77.70
Singapore	Per dol.	—	27½d.—27½d.	27½d.—27½d.
Switzerland	Fr. to £	25.22½	26.27—26.30	25.64—25.67
Vienna	Kr. to £	24.02	315,000—325,000	320,000—330,000
Yokohama	Per yen	24.58d.	25½d.—25½d.	25½d.—25½d.

Crude Drugs, etc.

ANTIMONY.—Business is quiet, but the tone is steady, special brands of English regulus being £34 10s. to £55. Warehouse lots of foreign refined are obtainable down to £25 5s., but terms for forward shipment could easily be arranged at £23 c.i.f. Crude seems rather easy, the business having been reported for immediate delivery at Hamburg at about £22, and c.i.f. terms for shipment are at around £20 10s. to £20 15s. per ton c.i.f. **BAYBERRY BARK** is offered at 7½d. per lb. on the spot.

CADMIUM.—There seems to be widening competition from various sources, not only from the Continent but also from Australia and America, but prices are fairly well sustained at between about 4s. 6d. to 4s. 10d. per lb. **CARAWAY SEED.**—A London produce market report states that samples are to hand of new crop for early shipment, and although prices are comparatively low, it is very evident up to the present that the bulk is not suitable to the trade. The caraways are not properly dried and show a very large proportion of green and immature seed, and it is the general opinion that the crop will not be in a suitable condition for shipment before August-September. Buyers of the earlier shipments will doubt be deprived of a considerable amount due to loss in weight.

CHILLIES.—At auction 259 bags were bought in, comprising Zanzibar at 65s. to 70s., and Uganda at 65s. or cwt.

CLOVES.—Zanzibar are quiet and practically unchanged in the week, with spot sellers at 1s. 1½d. to 1s. 2d. To arrive, May-July shipment, is quoted at 1s. 1½d., and August-October has been sold at 1s. 2d. c.i.f. The weekly wharf statistics show landings nil and deliveries 46, leaving a stock of 14,769 bales against 4,446 bales last year.

COCONUT (DESICCATED) is quiet, fine selling on the spot at 37s. 6d., and medium at 38s. To arrive, June-July shipment has been sold at 35s. 6d. to 35s. 3d. c.i.f., and July-August at 35s. 9d. c.i.f.

COD-LIVER OIL.—As is usual at this period of the year, the market is extremely dull. Finest non-freezing steam-refined oil is nominally quoted at 110s. per barrel, c.i.f. London.

GAMBER.—Cubes are extremely scarce on the spot, the last price paid being about 70s. per cwt.

GINGER has been selling slightly more freely. Fair washed rough Cochin has realised 80s. per cwt., and wormy 77s. 6d., bold Calicut 80s., and wormy 75s. To arrive, fair washed rough Cochin is quoted at 5s., and B and C cut at 10s. c.i.f. The spot prices are 140s. and 110s. respectively.

LIME JUICE.—Due to the small stocks, price is firm, good raw West Indian being worth about 2s. 9d. per gallon, London or Liverpool.

MACE.—At auction 28 packages West Indian sold, comprising fair at 1s. 10d. to 2s., good pale 2s. 3d. to 2s. 4d., broken and pickings 1s. per lb.

MAGNESIUM.—The market varies a good deal between home makers' and Continental offers, the latter being made at comparatively low figures at around 3s. per lb. for sticks. British makers are asking 3s. 3d. to 3s. 9d.

MENTHOL continues quiet, with Kobayashi-Suzuki offering on the spot at 38s. 6d. per lb., the value of July-August shipment being 38s. 6d. c.i.f.

MERCURY.—Consumers have evinced but little interest and the market again developed an easier feeling since our last report, there being plenty of competition for the few small orders coming on the market. Business has been done at around £10 5s. per bottle, but second-hand parcels have sold at as low as £10. There is apparently not a great deal of mercury pressing on the market, and any notable amelioration of the demand would doubtless stiffen prices. Some importers were quoting £10 7s. 6d. per bottle early in the week.

NUTMEGS.—At auction 219 packages West Indian sold at firm prices, including sound 90's at 10d.; 71's to 113's, slightly wormy, 6½d. to 8½d.; 109's, wormy, 6d.; broken and wormy, 5d. per lb.

OLIVE OIL.—Some importers report better business recently. Finest French edible is quoted at 7s. per gallon, B.P. oil is offered at 5s. 6d.

PEPPER.—Little interest is shown in black pepper, the spot quotation for Singapore being unchanged at 4½d. per lb., and for August-October shipment 4d. c.i.f. d.w. is quoted. Lampong on the spot is 4½d., fair Telli-cherry 4½d., and Aleppy 4½d. White Muntok has sellers at 6½d., and the value of white Singapore is 6d.

RUBBER is decidedly firmer, and fully ¾d. per lb. dearer since our last report. The firmness of the market is due to a strong feeling in the East, where prices during the past few days have advanced for all positions. America is also following the advance, and the forward deliveries are in demand all round. There has been quite good business done on the spot, but buyers will no doubt find that supplies are much more plentiful when once the standard prices reaches 1s. 3d., as several importers have instructions to sell at this figure. The statistical position is practically unchanged on account of the dock strike, and the London stock now stands at 49,985 tons. Quotations (Wednesday, 5 p.m.):—No. 1 standard crêpe and ribbed smoked sheet, spot and July, 1s. 2½d.; August, 1s. 2½d.; September, 1s. 3d.; October-December, 1s. 3½d.; January-March, 1s. 3½d. per lb.

SAFFRON.—Valencia is quiet on the spot at from 132s. 6d. to 135s. per lb.

SEEDS.—The following are the current spot quotations:—Spanish ANISE, 95s., and Russian, 63s. CANARY: Mazagan, 17s. 6d.; Larache, 16s. 6d. CARAWAY SEED: Dutch, 142s. 6d., and Morocco, 98s. CORIANDER SEED: Sound, 55s., and wormy, 34s. to 40s. CUMMIN SEED, 125s. DILL SEED, 19s. to 21s. 6d. FENNEL SEED: French, 75s., and Indian, 50s. FENUGREEK SEED: Morocco, 24s. 6d. LINSEED: Morocco, 23s. HEMP SEED, 15s. MUSTARD SEED: English, 30s. to 35s. per cwt.

STARCH PRODUCTS.—Dutch farina remains slow of sale at 14s. 6d. per cwt. on the spot, and 14s. f.o.b. for prompt shipment. Rice starch crystals offer at 40s. for English and 34s. for Continental. Superior Dutch dextrin is 23s., and No. 2 20s. Maize starch powder is offered at 15s. 1½d. per cwt.

VANILLA.—Bourbon beans are very difficult to find on the spot, and new supplies will not be obtainable until September. Tahiti is offered at 12s. 6d. per lb. for "white label."

Essential Oils

THERE are no changes of importance to record this week. Japanese mint has been selling on the spot and c.i.f. to arrive. Eucalyptus oil is dearer. Dutch caraway oil is also quoted at rates which will be fairly remunerative on early contracts. Cassia oil is steadier. Reports from Ceylon indicate that production of citronella oil has been curtailed by floods, and as spot supplies are short, prices may advance.

ANISE (STAR).—"Red Ship" is quiet and unchanged at 1s. 9½d. to 1s. 10d. per lb. on the spot. The price quoted for shipment is 1s. 9d. c.i.f.

BERGAMOT is unchanged, spot holders of 37 to 39 per cent. quote 12s. to 12s. 6d. per lb.

BOIS DE ROSE (FEMELLE) is quoted on the spot at 10s. to 10s. 3d. per lb., which is unchanged.

CAMPHOR.—White essential is quoted on the spot at 75s. per cwt. for drums and 80s. for cases.

The exports from Japan during April amounted to 2,026 piculs, valued at 54,461 yen. During the four months ended April 30 they were as follows:—

	1921	1922	1923
Piculs	1,415	4,211	6,166
Yen	24,717	105,078	144,858

CARAWAY.—Small sales of Dutch double-distilled have been made recently at 30s. 6d. per lb. on the spot. New crop oil will not be on the London market until about the middle of August, and the price then will probably be about 22s. per lb. for double-rectified. September delivery is quoted at 18s. 3d. for crude and 20s. for double-distilled in some quarters.

CASSIA is a shade firmer on the spot, following more inquiry at 12s. per lb. for 80 to 85 c.a.

CINNAMON.—Ceylon leaf on the spot is steady at 4½d. per oz., and 3½d. c.i.f. to arrive.

CITRONELLA.—Ceylon on the spot is unchanged at from 3s. 6d. to 3s. 7d. per lb. July-August shipment is

offered at 3s. 1d. c.i.f. Java is steady at from 4s. 2d. to 4s. 3d. per lb. on the spot, and 4s. c.i.f. to arrive.

CLOVE.—English distilled is quoted on the spot at 7s. 6d. per lb. A few tons of clove oil has recently arrived from Germany, but this is probably clove-stem oil.

EUCALYPTUS.—Spot prices have moved upwards again, and 2s. per lb. is now wanted for 80 to 85 cineol; 70 to 75 is 1s. 11d.

GERANIUM.—Bourbon on the spot is quoted at from 28s. 6d. to 29s. per lb. There are sellers of Algerian at from 27s. 6d. upwards.

LEMON is unchanged at 2s. 9d. to 2s. 11d. per lb. for spot.

LEMONGRASS.—Cochin is nominal at 2½d. per oz. on the spot. Business at 2½d. c.i.f. would probably be accepted.

MINT.—Japanese dementholised Kobayashi-Suzuki has been in steady demand on the spot at 7s. per lb., and 6s. 9d. c.i.f. to arrive. Our report of business done last week at 5s. 11d. c.i.f. referred to January-February shipment, at which there are sellers.

ORANGE.—Sicilian sweet is quiet and unchanged; spot sales have been made at 13s., and up to 14s. is being quoted. West Indian is quiet and unchanged at 9s. 6d. to 10s.

PATCHOULI.—Usual Penang quality is offered at 27s. per lb.

ROSEMARY.—Spanish is steady on the spot at 1s. 8d. per lb. in large drums.

SANDALWOOD.—East Indian B.P. oil is steady on the spot at from 25s. to 25s. 6d. per lb. There are rumours on the market of interesting developments in the near future in regard to this article.

THYME.—Spanish on the spot is unchanged at 4s. 3d. per lb. for 28 to 30 per cent.

YLANG-YLANG.—Comoros distillate is quoted at from 15s. to 16s. per lb.

Pharmaceutical Chemicals, etc.

The position in the spot fine chemical market shows practically no change on the week. In our last report a number of reductions in prices were recorded, and at these lower levels the market is so far maintained, but the tone generally leaves much to be desired. The complaint of "no business" is still very general in all quarters.

ACETANILIDE has shown but little life during the week—quoted rates are still in the region of 1s. 5d. to 1s. 6d. per lb.

AMIDOPYRIN is steady, but hardly ever inquired for—dealers quote at about 14s. per lb.

ASPIRIN.—Holders of spot supplies of good brands are quoting at about 3s. 1d. per lb., but would possibly accept less for quantities.

BARBITONE, although a slow market, keeps very steady at 21s. per lb.

BENZOIC ACID seems of no interest to buyers at present—quoted from 2s. 3d. to 2s. 6d. per lb.

BETANAPHTHOL (resublimed) is unaltered at about 1s. 10d. per lb.; benzaldehyde .03 is quoted at about 3s. per lb., with sales poor; benzonaphthol has moved back to its former level of 5s. per lb.

BROMIDES.—There is little to add to our comments of last week. Spot stocks seems very considerable, and some holders appear to be in a position to sell at cheap rates for good lots. Ammonium, 7d. to 7½d. per lb.; potassium, crystals and granular, 6½d. to 7½d. per lb.; sodium, crystals and granular, 7d. to 7½d. per lb.

CALCIUM LACTATE keeps fairly steady, with spot holders asking about 1s. 11d. per lb.

CHLORAL HYDRATE is well maintained on spot, with duty-paid material offering at about 4s. per lb.

CITRIC ACID, B.P.—It seems as though the season for this product has been missed to a great extent. The demand during May to June was exceptionally poor and has shown but little improvement since. Trading has been almost solely confined to home consumption, and in that direction the usual order has been for half-ton lots. At the moment there seems to be rather heavy supplies on the market in the hands of dealers who had purchased early in the year for forward de-

livery. Some large parcels have been floating around, offers being asked for, but nothing reasonable could be obtained. It is difficult to define a market price, but there should be no difficulty in securing moderate quantities in the region of 1s. 7d. to 1s. 7½d. per lb.

CREOSOTE, B.P., is steady, but seldom inquired for—quoted at about 2s. 2d. per lb.

CREOSOTE CARBONATE continues to be quoted at 8s. 3d. per lb., with very little business about.

GUAIACOL CARBONATE is offering by dealers at 8s. 3d. per lb. on a slow market.

HEXAMINE seems steadier at the easier prices mentioned last week; business, however, still drags at 3s. 10d. to 4s. per lb., as to quantity.

HYDROQUINONE finds a small business with the prices asked, from 3s. 6d. to 3s. 9d. per lb.

METHYL SALICYLATE seems steadier, with dealers asking about 2s. 5d. per lb.

METHYL SULPHONAL continues to be offered at 15s. per lb., with sales very light.

PARAFORMALDEHYDE is fully maintained at 3s. 9d. per lb., and there has been a limited business.

PARALDEHYDE is quoted at about 1s. 5d. per lb., but possibly any sales effected have been at a shade less.

PHENACETIN varies on quotation, but the average price quoted is in the region of 6s. 3d. per lb.

PHENAZONE has recovered a little from the recent decline and is now fairly steady at about 7s. 3d. per lb.

PHENOLPHTHALEIN is fully maintained at the high levels of 6s. 6d. to 6s. 9d. per lb., and may go even higher.

POTASSIUM PERMANGANATE, B.P., has been rather slower in demand, and spot holders are now asking from 10d. to 10½d. per lb. for quantities.

RESORCIN is steady at 5s. 6d. to 5s. 9d. per lb., but business has been quiet.

SALICYLIC ACID, B.P.—The market seems steadier this week, but business continues poor—quoted in the region of 2s. 2d. to 2s. 3d. per lb.

SILVER NITRATE.—The price of crystals on July 25 was based on a metal price of 30½d. per oz. as follows:—In quantities of 25 oz., 2s. 1½d. per oz.; 50 oz., 2s. 0½d.; 100 oz., 2s. 0½d.; 250 oz., 1s. 11½d.; 500 oz., 1s. 11½d.

SODIUM BENZOATE is of no interest; B.P. quoted at about 2s. 6d. per lb.

SODIUM DIETHYLBARBITURATE has dropped down to the much cheaper rate of 18s. 6d. per lb.

SODIUM SALICYLATE.—Dealers' prices show no change on the week, and business has been dragging. Powder, 2s. 4d. to 2s. 6d.; crystals, 2s. 8d. to 2s. 9d.; phys. pure flake, 2s. 10d. to 2s. 11d. per lb.

SULPHONAL is nominal with no movement at about 14s. 6d. per lb.

TARTARIC ACID, B.P.—The spot position is not at all firm. Supplies seem ample with some holders weak. The quoted rate is at about 1s. 2½d. per lb., but orders for good quantities would be accepted in some quarters at a shade less.

TERPIN HYDRATE is a steady market, although business has been slow—quoted at 1s. 9d. per lb.

THYMOL is unchanged on spot at about 15s. per lb.

Industrial Chemicals, etc.

London, July 26.

THE home demand for "heavies" continues very slow and small in volume, the chief consuming industries, such as textiles, wanting next to nothing. Export business, although difficult, has been as good as can be expected, but the uncertain state of affairs on the Continent and depressed international money values is driving a lot of business from this market. The result of the appeal case against the import duty on formaldehyde is still outstanding, meanwhile business in this product is at a standstill.

ACETIC ACID is unchanged. Buying has been limited to the rather restricted supplies offering on spot. 80 per cent. technical, £47 to £48; 80 per cent. pure, about £50; 98 per cent glacial, £60 to £63 in cases, and £71 in glass demijohns, ex wharf, London.

ACETONE has been well inquired for with little available; on this account the market is especially firm at quoted at about £120 per ton.

ALUM remains dull, with dealers offering Continental at about £10 10s. per ton, for lump in casks.

AMMONIA (ANHYDROUS).—The season's demand seems to be ending and sales have dropped off; quoted unchanged at about 1s. 5d. per lb. for 99.95 per cent.

BLEACHING POWDER (35 to 37 per cent.) is being taken up only very slowly as offered by dealers at perhaps a shade under £10 per ton, for shipment.

CREAM OF TARTAR is a really good market, with the price well held at 90s. per cwt. for one-ton lots, and slightly more for smaller quantities.

EPSOM SALT of commercial quality offered by importers has met with very little sale; quoted at about £5 per ton, in bags.

FORMALDEHYDE (40 per cent. volume) is nominal at about £96 per ton; no business. The trade is still hindered by the delay in the issue of the Referee's decision in the Appeal heard some weeks ago.

LEAD ACETATE has been called for now and again in quite small quantities; quoted steadily at—brown, £42; white crystals, £43 per ton.

LITHOPONE has had a steady but limited sale, and the price seems fairly steady at last week's slightly reduced prices of £22 to £22 10s. per ton for 30 per cent. Continental red seal.

NICKEL SULPHATE.—The British makers' prices for home and export, delivered and f.o.b. respectively, are unchanged at £38 per ton for single and double salts.

POTASH CAUSTIC.—The spot position keeps up fairly well, despite the rather marked lack of business; quoted at about £32 10s. per ton for 88 to 92 per cent. solid, in drums.

POTASSIUM CARBONATE is perhaps steadier at unchanged values, but business is still poor; 90 to 92 per cent., about £28; 96 to 98 per cent., £32 per ton.

POTASSIUM CHLORATE is very dull of sale at about 3d. per lb. for crystals and granular.

POTASSIUM PERMANGANATE.—This item seems fairly steady with a limited business passing. The price for commercial quality is about 9½d. to 10d. per lb.

POTASSIUM PRUSSATE.—The business done has generally been for very limited quantities with the price cut to the extreme. Quoted at about 1s. 3d. per lb.

SODIUM ACETATE is very steady at £25 10s. per ton, with a slight advance not unlikely.

SODIUM BICARBONATE.—Refined from British makers is steady at £10 10s. per ton, in bags free, carriage paid, for home trade only. Mineral water is about £9 per ton.

SODIUM BICHRONATE for home trade only from British makers is unchanged at about 4½d. per lb.

SODIUM CHLORATE is a dull item: quoted by dealers at about 2½d. per lb.

SODIUM HYPOSULPHITE.—Pea crystals on spot in one-cwt. kegs are offering from £15 5s. to £15 10s. per ton, and commercial quality, in casks, about £10 5s. per ton.

SODIUM PRUSSATE is extremely dull; dealers are quoting at about 7d. per lb., with a possibility of slightly less being accepted for good quantities.

SODIUM SULPHIDE.—Importers' quotations are about the same, but there is a scarcity of good business: 60 to 62 per cent. solid, £14; ditto, broken, £15 per ton, in drums; 60 to 65 per cent. concentrated, £15 per ton, in casks.

ZINC-PRODUCTS.—The continuous sharp rise experienced in zinc metal of late has certainly imparted greater firmness to most zinc-products, and business has been developing a little more freely. Zinc dust ranges from £40 to £45 a ton, according to quality, and zinc ashes are dearer at £10 a ton based on 70 per cent. free on trucks. Zinc-oxide is in good demand.

COAL TAR PRODUCTS, ETC.—Carbolic acid crystals have been in good inquiry for export, and as a result the market is "firming" up. In other directions there has been very little doing, and prices show no change with the market generally weak. ANILINE OIL is down a shade to about 9d. to 9½d. per lb., and salt holds at 9½d. to 10d. per lb., packages free. BETANAPHTHOL remains slow of sale, with the quoted rates from 1s. 1d. to 1s. 2d. per lb. PITCH, on spot in London, has maintained its better figure as quoted last week at 135s. Inquiry continues for forward positions, for which the quotations

are well held at 145s. to 150s. per ton. Pure METHYL ALCOHOL has been in steady but small demand, with the price ex wharf London firm in the region of £100 per ton. CARBOLIC ACID crystals have been active for export this week, and the ruling price f.o.b. is firm at 1s. 2d. per lb., with every sign of advancing shortly. CREOSOTE OIL is steady but on the quiet side at 10d. per gallon, f.o.b. CRESYLIC ACID has shown little sign of activity: quoted at 1s. 10d. to 2s. 2d. per gallon. PYRIDINE is very scarce on spot, and the price is firm in the region of 18s. per gallon. HEXAMETHYLENE shows no sign of breaking from the present unchanged rates of 4s. to 4s. 3d. per gallon. DISINFECTANTS are quoted at about 3s. 9d. per gallon, barrels free. NAPHTHALENE is steady but in little request as offered at about £20 per ton. Crude, £7 to £13; crystals, £21; powder, £17; balls, £24; tablets, £28; candles, £28 per ton, packages free.

Fixed Oils, etc.

A NUMBER of further reductions of some importance are recorded this week. Linseed oil is going sharply in buyers' favour for forward positions. Turpentine, on the other hand, has improved a little. Business generally is very poor. ACID OILS.—This market has seen very little business, and at the close prices were nominal at the following reductions: Coconut, palm kernel, 37s. 6d.; groundnut, 37s.; soya, 34s. 6d.; all spot. CASTOR OIL.—There is still no change in Hull prices for spot to August: pharmaceutical, 61s.; first pressings, 56s.; second pressings, 55s., in not less than one ton lots. COCONUT OIL.—This market has had a dull week, and prices, although showing little change, are rather weak: deodorised, spot, 56s.; Ceylon, c.i.f., 45s.; Cochin, c.i.f., 50s. COTTONSEED OIL.—All grades are unchanged on the week, but business has been very slow, and the tone is now very unsteady: deodorised, 48s.; common edible, 46s.; soapmaking, 42s.; crude, 38s. 6d., all spot. GROUNDNUT OIL.—There has been practically no business here: deodorised, spot, 52s.; crude Oriental, about 45s. c.i.f. PALM-KERNEL OIL.—Business has been lacking and prices are easier on the week: deodorised, 45s.; crude, 40s. 6d., all spot. PALM OIL.—Further reductions in prices for all grades took place late in the week's business, and at these levels there has been some moderate business transacted: Lagos, 34s.; softs, 33s. 9d.; mediums, 34s. 3d.; hards, 34s. 3d.; bleached, 37s.; all spot. RAPE OIL.—Little doing here—prices are returned unchanged: refined, about 44s. 6d.; crude, 41s. 6d., all spot. SOYA BEAN OIL has moved very slowly—prices are about the same: deodorised, 44s.; crude, about 41s., all spot. LINSEED OIL (raw, naked).—Nothing in the way of improvement in demand can be recorded; in fact, towards the close things were very quiet and easier rates were being quoted, especially for forward positions: on spot, 43s.; July, 41s. 3d.; August, 39s. 9d.; September-December, 37s. 6d.; Hull, on spot, 39s. 6d.; August, 38s. 3d.; September-December, 37s. 3d. Boiled linseed oil is quoted at 36s. on spot. TURPENTINE.—There is not much change in the position, but the tendency of the market is irregular. The spot demand became very dull early this week, buyers having been doubtless influenced by the fact that of the 8,000 barrels referred to here last week as lying in the river, some 6,000 barrels are now actually in the course of being landed. Spot was on Wednesday quoted 77s. 6d., and July-December, however, was more firmly held at 72s. 9d., while the fact deserves notice that contracts for January-April have been arranged at some premium over the latter position. The quantities held at the wharves showed hardly any alteration at about 2,700 barrels, but the next returns should disclose some increase. WOOD OIL.—Hankow in barrels on spot is quoted nominally at 104s., with forward positions from 93s. to 97s.

London Drug Auctions

Commercial Sale Rooms,
Mincing Lane, E.C.3. July 26.

AFTER an interval of eight weeks an auction was held today, when twelve brokers brought forward supplies. The result almost approached a fiasco, and the auction was concluded at 12.45 p.m., an hour earlier than had been anticipated. Matto Grosso ipecacuanha was practically the only drug to sell in quantity, and the bulk of that sold was water-damaged, prices favouring the buyer. Practically all other drugs were neglected, even good quality honey, which was expected to sell. A few cases of cardamoms, benzoin and rhubarb were forced off.

The following table shows the quantity of goods offered and sold, the asterisk denoting private sales:—

	Offered	Sold		Offered	Sold
Aconite root ..	14 ..	0	Insect flower stems	44 ..	0
Adonis herb ..	63 ..	0	Insect powder (kgs.)	10½ ..	0
Albumen .. (cs.)	10 ..	0	Ipecacuanha—		
Aloes—			Matto Grosso	75 ..	19
Curacao (cs.)	150 ..	0	Jaborandi leaves	38 ..	0
Ambergris (oz.)	10½ ..	0	Jalap ..	10 ..	0
Amunon, brom. (cs.)	10 ..	0	Jambul seed ..	31 ..	15
Ammoniacum (cs.)	12 ..	0	Juglandis leaves ..	3 ..	0
Anise, star (cs.)	10 ..	0	Kamala ..	10 ..	0
Annatto seed ..	2 ..	2	Kola ..	169 ..	1
Argol ..	68 ..	0	Lime juice (pus.)	33 ..	5*
Arsenic ..	9 ..	0	Lime oil ..	7 ..	0
Asafetida ..	12 ..	0	Lime tree flowers ..	20 ..	0
Balsani, African ..	5 ..	0	Liquorice juice		
Peru ..	2 ..	0	(sticks) (cs.)	2 ..	0
Bay oil ..	3 ..	3*	Liquorice root ..	63 ..	0
Benzoin—			Lycopodium ..	14 ..	0
Palembang ..	39 ..	0	Manna ..	10 ..	0
Siam ..	25 ..	0	Marjoram ..	5 ..	0
Sumatra ..	294 ..	32	Marshmallow root ..	11 ..	0
Buchu ..	28 ..	3	Mastic ..	3 ..	0
Calamum root ..	104 ..	0	Musk seed (cs.)	4 ..	0
Calumba ..	200 ..	50	Myrrh ..	76 ..	0
Camphor (ref.) ..	5 ..	0	Nux vomica ..	96 ..	0
Camphor oil, white ..	105 ..	0	Olibanum ..	188 ..	0
Cannab, ind. ..	18 ..	0	Orange peel ..	72 ..	0
Cantharides (Russ.) ..	15 ..	0	Orechella weed ..	8 ..	8
Cardamoms ..	212 ..	13	Orris (Flor.) ..	14 ..	0
Cascara amarga ..	2 ..	0	Patchouli leaves ..	10 ..	0
Cassia fistula ..	103 ..	0	Potash bromide ..	5 ..	0
Cassia oil ..	5 ..	0	Quebracho bark ..	33 ..	33
Celery seed ..	10 ..	0	Quercus bark (pdr.)	4 ..	0
Chiretta ..	23 ..	0	Quince seed ..	15 ..	0
Cinnamon oil (cs.)	1 ..	0	Rhatany root ..	48 ..	0
Cocculus indicus ..	21 ..	0	Rhubarb (Ch.) ..	193 ..	6
Colocynth ..	3 ..	3	Rosemary leaves ..	3 ..	3
Condurango ..	17 ..	0	Sage leaves ..	23 ..	0
Cresote carb. ..	10 ..	0	Sandarae ..	8 ..	0
Croton seed ..	12 ..	0	Sarsaparilla—		
Cubeb ..	59 ..	0	Grey Jamaica ..	17 ..	4
Cuttlefish bone ..	129 ..	0	Honduras ..	3 ..	0
Digitalis leaves ..	93 ..	0	Mexican ..	15 ..	0
Dragon's blood ..	36 ..	2*	Native Jam ..	32 ..	1*
Elemi .. (cs.)	53 ..	0	Scammonium ..	1 ..	0
Ergot ..	30 ..	10	Seedlac ..	12 ..	0
Frangula bark ..	27 ..	0	Senna and pods—		
Galaug ..	40 ..	0	Alex. ..	93 ..	0
Galbanum (tins) ..	2 ..	0	Timnevelly ..	272 ..	41
Galls ..	22 ..	0	Sinamaba ..	10 ..	0
Gamboge ..	32 ..	0	Sodium bromide ..	2 ..	0
Gentian ..	33 ..	0	Squill ..	36 ..	0
Glycerin .. (dms.)	5 ..	0	Stramonium ..	88 ..	0
Guaiaecum ..	65 ..	6*	Strophanthus ..	8 ..	0
Guarana ..	4 ..	0	Tamarinds ..	48 ..	0
Gum acacia ..	109 ..	0	Thyme leaves ..	2 ..	0
Gurjun oil (dms.)	46 ..	0	Tonka beans ..	13 ..	0
Henna leaves ..	95 ..	0	Tuba root ..	6 ..	0
Honey—			Turneric ..	235 ..	0
Calif. ..	3 ..	0	Valerian root ..	34 ..	0
Chilian ..	200 ..	0	Wax (bees)—		
Cuban ..	87 ..	0	East African ..	337 ..	0
Guatemala ..	100 ..	0	East Indian ..	177 ..	5*
Jamaica ..	752 ..	45	Jamaica ..	9 ..	0
New Zealand (cs.)	40 ..	0	Madras bl. ..	7 ..	0
San Domingo ..	37 ..	0	Witch hazel bark ..	15 ..	0
St. Lucia ..	8 ..	0	Wormseed ..	17 ..	0
Trinidad ..	213 ..	0	Zedoary root ..	2 ..	0
W. Indian ..	2 ..	0			

ANISE (STAR).—Ten cases were held at 52s. 6d., at which business has been done privately.

ANNATTO SEED.—A single bag of fair, slightly sea-damaged East Indian sold at 8½d. per lb., and a single bag of fair bright sound at 1s. per lb., which is the private price for a bag or two.

BENZOIN.—Seven cases common country cut Sumatra seconds of old fracture sold without reserve at £5 per cwt.; 12 cases of good alomdy Sumatra seconds sold at £9 10s., subject to sciers' approval; and for 15 cases fair alomdy seconds £8 10s. per cwt. was paid. Palembang was held at from 85s. to 90s. per cwt. as to quality.

BUCHU.—Fair round slightly stalky and yellowish round leaf was limited at 3s. per lb. Two bags of fair green longs sold at 3s., and a bale of stalky ovals went at 2s. 9d. per lb.

CALUMBA.—A lot of 50 bags of medium to bold good yellowish sorts sold at 5s. per cwt.

CARDAMOMS.—A few lots were forced off, including Ceylon-Mysore small pale at 3s. 2d., bold pale splits at 3s. 9d. to 4s., small specky 3s., brown and split 2s. 10d., decorticated seed 4s. 3d. to 4s. 4d.; a single case green Aleppy went at 3s. 1d.

COLOCYNT.—Three bales of pulped sold without reserve at 8d. per lb.

ELEMI.—Good pale firsts was obtainable in quantity at 65s. per cwt.

ERGOT.—Ten cases slightly wormy Spanish had been sold privately, and 1s. 6d. was asked for further parcels of wormy.

GURJUN BALSAM.—A parcel of 46 packages (drums and casks) was limited at 10d. per lb.

HONEY.—Although a fair selection of attractive quality offered, buyers held off owing to the abnormal conditions, and 31 packages only sold, including 11 barrels cream set Jamaica at 42s., 14 barrels pale set at 42s., and 6 barrels pale amber liquid at 42s. 6d. per cwt.

IPECACUANHA was practically the only drug sold in quantity, 19 bales water-damaged Matto Grosso being sold at from 6s. 3d. to 6s. 6d. per lb.; one lot 5s. 6d. Fair sound bright natural was held at 7s. 6d.

JALAP.—Ten bags Vera Cruz (14.3 per cent. and 13.8 per cent.) were bought in at 2s. 4d. per lb.

JAMBUL SEED.—Five bags of partly wormy sold without reserve at 1½d. per lb.

KOLA.—A single bag of fair West Indian halves sold at 1½d. per lb.

LIQUORICE JUICE.—A single case of "Taslo" brand sold without reserve at 85s. per cwt.

LYCOPodium.—Four cases of genuine Russian treble-sifted were limited at 1s. 10d.

MASTICH.—Three cases of fair yellowish teas were limited at 3s. per lb.

OCHELLA WEED.—A lot of 8 bales badly sea-damaged sold without reserve at 1s. per cwt.

QUEBRACHO BARK.—A lot of 33 bags country and sea-damaged sold at 1s. 4d. per lb. without reserve.

QUINCE SEED.—A parcel of 10 bags fair Cape was obtainable at 3s. 6d.

RHUBARB.—Six cases, including medium to bold dull coat wild Shensi with three-quarters ordinary pale pinky fracture and one-quarter dark sold at 1s. 6d., medium at 1s. 5d. to 1s. 6d., and small round at 1s. 9d. per lb. without reserve.

ROSEMARY LEAVES.—Three bags sold without reserve at 10s. per cwt.

SARSAPARILLA.—Grey Jamaica was 6d. per lb. cheaper compared with private prices, 4 bales of fair selling at 2s. 6d. per lb. Honduras was brought in at 3s. 7d. and Mexican at 1s. 9d. per lb. Native Jamaica was offered in quantity, but there were no bids; 1s. 8d. to 1s. 9d. was asked for fair red.

SENNA.—About 40 bales Tinnevelly were disposed of, comprising medium to bold good green leaf, at 6½d.; middling greenish, 4½d.; and common to ordinary yellowish, 2d. to 2½d. per lb.

TAMARINDS.—Fair Barbados in bond were limited at 27s. 6d. per cwt.

VALERIAN.—A lot of 26 bales fair Belgian was limited at 50s. per cwt.

Retrospect of Fifty Years Ago

Reprinted from
"The Chemist and Druggist," July 22, 1873

A Botanical Attraction

Those who regard botany as a dry science should study it in the fashion recommended by Sir Walter Scott, as the proper mode in which to view fair Melrose aright. Once a year the Royal Botanic Society gives the opportunity of viewing their charming grounds by the pale moonlight, though truly they aid fair Luna in an abundant degree. This annual *fete* was held last Wednesday evening, and a more lovely night could not have been chosen. The air was soft but not close, the velvet turf was quite dry, no wind interfered with the thousands of lights which by their variety produced a charming artificial light and shade, while some ten thousand ladies and gentlemen, the former in all the radiance of ballroom costume, paraded the broad promenades or rested in the airy conservatories. The gentle undulations of the gardens, and the luxuriance of the foliage made the illuminations particularly effective, and when the rose and green tinted magnesium lights were brought into action; the gay scene partook of an almost unearthly character. Several military bands enlivened the entertainment, and a handsome show of fuchsias and other flowers attracted but too little attention. Without in Regent's Park was crowded a mass of carriages sufficient to carry away the inhabitants of a good-sized town. The study of botany under such circumstances as these possesses certainly all the fascinations which its lovers claim for it.

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(Operative in Great Britain and Ireland only)

3/- SIZE (P.A.T.A.)

Description of Case	Contents of Case	Costs you	Yields	Total Profit	PROFIT ON		PROFIT PER BOTTLE
					Selling Price	Buying Price	
Case A	12 dozen	£16 0s.	£21 12s.	£5 12s.	26%	35%	9½d.
" B	6 "	£8 2s.	£10 16s.	£2 14s.	25%	33½%	9d.
" C	3 "	£4 4s.	£5 8s.	£1 4s.	22½%	28½%	8d.

1/9 SIZE (P.A.T.A.)

Description of Case	Contents of Case	Costs you	Yields	Total Profit	PROFIT ON		PROFIT PER BOTTLE
					Selling Price	Buying Price	
Case D	18 dozen	£14 0s.	£18 18s.	£4 18s.	26%	35%	5½d.
" E	9 "	£7 2/6	£9 9s.	£2 6/6	24½%	32½%	5½d.
" F	6 "	£4 17/6	£6 6s.	£1 8/6	22½%	29½%	4½d.

COMBINED LOTS OF 3/- and 1/9 SIZES (P.A.T.A.)

Description of Case	Contents of Case	Costs you	Yields	Total Profit	PROFIT ON		PROFIT PER BOTTLE on	
	3/- Size & 1/9 Size				Selling Price	Buying Price	3/- Size	1/9 Size
Case G	6 doz. & 9 doz.	£14 18s.	£20 5s.	£5 7s.	26½%	36%	9½d.	5½d.
" H	2 " " 6 "	£7 8s.	£9 18s.	£2 10s.	25½%	33½%	9d.	5½d.
" K	1 " " 4 "	£4 12s.	£6 0s.	£1 8s.	23½%	30½%	8½d.	5d.
" L	8 " " 5 "	£14 9s.	£19 13s.	£5 4s.	26½%	36%	9½d.	5½d.
" M	4 " " 3 "	£7 15s.	£10 7s.	£2 12s.	25½%	33½%	9d.	5½d.
" N	2 " " 2 "	£4 7/6	£5 14s.	£1 6/6	23½%	30½%	8½d.	5d.

The above Special Advertising Offers are delivered Carriage Paid to destination. Cases are supplied free and are non-returnable. A choice selection of new and attractive advertising material will be sent on receipt of post card.

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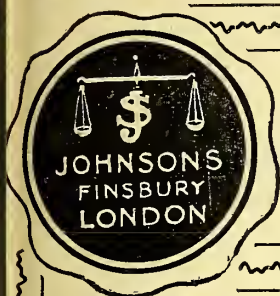
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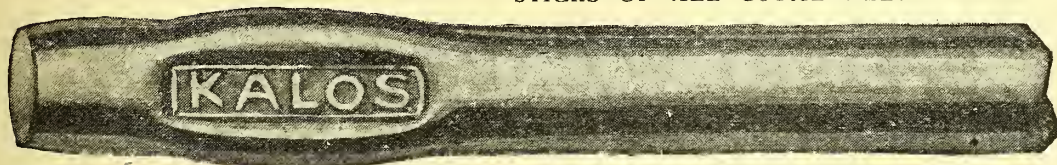
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We are now constantly detailing and sampling to the Medical Profession throughout Great Britain the following products with gratifying results.

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	Per Dozen	Suggested Price to Consumer
Cod Liver Preparation, 16 oz. stamped	76/-	8/-
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Magma Magnesia, 16 oz. unstamped ..	26/6	3/-

MADE IN CANADA BY

HENRY K. WAMPOLE & Co., LTD.

Manufacturing Pharmacists,

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Himrod's ASTHMA CURE

Established
50 years.

IT is a powder to be burned and the fumes inhaled without any bad after-effects. Recommended by physicians throughout the world.

"I have tried every remedy ever invented, and 'Himrod's Cure' is the only one in which I have absolute confidence."—EMILY FAITHFUL.

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Fellows' Syrup
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THE STANDARD TONIC FOR OVER HALF A CENTURY

Prescribed by Physicians all over the world, Fellows' Syrup of the Hypophosphites, in addition to being in constant and increasing demand, adds distinction to a chemist's show window. It is a symbol of progressiveness and reliability

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In two sizes, namely:

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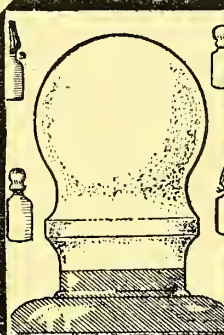
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- 1 IT IS RECOGNISED AS SUCH BY THE LEADING MEDICAL JOURNALS.
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**ACELTA EFFECTIVELY REPLACES
ALL OTHER FORMS OF CAPPING.**

*Write to-day for Free Sample
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ACELTA CAPPING CO. LTD.
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HEADACHES**

Send a post card for the above unusual
design attractively embossed in colours on
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A useful link between you and the Advertisement
Campaign now running in the press to familiarise
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of "Bidor."

- (1) It does not give merely temporary relief, but is *permanent*
in its effects, removing the constitutional causes of
chronic and nervous headaches (migraine). (2) It is
absolutely harmless to use. (3) It is a preparation
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Bidor is retailed at 3/- per tube or 36/- per
doz., stamped. Unstamped 2/6 or 30/- per doz.

DISCOUNT.

6 dozen and under 1 gross	...	Less 25 per cent	& 10 per cent
12 " " " 3 " "	...	25 " "	12½ "
36 " " over	...	25 " "	15 "

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AN EXTENSIVE NATIONAL ADVERTISING CAMPAIGN FOR ROBOLEINE

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OPPENHEIMER SON & CO., LTD.
179 QUEEN VICTORIA ST., LONDON, E.C.4

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(ROBERTS)

Recognised by the Medical Profession as
THE BEST TONIC.

Supplied in 8-oz. and 16-oz. Bottles by all the
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Inquiries Invited for
**NEW & RARE
MEDICINES**

of French, Italian and Russian Origin.

ROBERTS & CO.,
76 New Bond Street, 5 Rue de la Paix,
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NURSE HARVEY'S MIXTURE

A safe, simple, and reliable remedy for Children's Ailments is advertised so extensively in the daily and weekly Press as to bring mothers to the retailer without effort on his part.

The selling has been done before the mother reaches the chemist, and, having supplied her, it is only common sense to claim she will buy other family necessities from him. Moreover, the retailer has a profitable return on a quick turnover.

For Direct Terms apply to—

OSCAR SCRUTON & CO., YORK

MAWSON'S

OPTIMUS FILTERS

The most efficient household filter.
Made in different sizes in earthen-
ware, glass and tourist patterns.
Stocked by leading wholesalers.

Write for terms to the manufacturers.

MAWSON FILTER COMPANY
(MAWSON & PROCTOR, LTD.)
NEWCASTLE-ON-TYNE.

DISPLAY PROFIT

Per **1/3³/₄** Bottle

DR. HAIR'S ASTHMA CURE

ADVERTISING DISPLAY TERMS:

In an earnest endeavour to make a living profit possible for every Chemist we hereby offer special advertising display terms to *the retail drug trade* in England, Scotland and Wales. On condition that you give us not less than 10 days' window display, and undertake to maintain our fixed retail price of 5/- we will execute orders for Dr. Hair's Asthma Cure as follows:—

	Contents of Case	Costs you	Yields you	Total Profit	Profit % on Selling Price	Profit % on Buying Price	Profit per bott.
OFFER {	"A" 1 doz.	48/-	60/-	12/-	20%	25%	1/-
	"B" 39 botts.	144/-	195/-	51/-	26 ¹ / ₂ %	35 ¹ / ₂ %	1/3 ³ / ₄

The "A" offer is for the display of a showcard and the distribution of booklets on Asthma and Bronchitis to your customers.

The "B" offer is for the window display of a showcard and not less than three bottles of Dr. Hair's Asthma Cure together with the distribution of booklets on Asthma and Bronchitis to your customers.

TERMS AND CONDITIONS:

Carriage paid to destination, all packages supplied free. Fixed retail price of 5/- to be maintained. Ten days' window display account to be paid by the 10th of the month following that when the order is executed.

Orders for Hair's Asthma Cure on these special advertising display terms must be sent direct to our nearest Official Distributor, or direct to us (address as below). In opening new accounts, the usual business references will be required.

ADVERTISING. A definite Advertising Campaign has been arranged for, and regular advertisements will be inserted in the leading Daily Newspapers, Weeklies, Illustrated Papers and Magazines—your sales of Dr. Hair's Asthma Cure will thus be amply supported.

Please let us know your requirements as quickly as possible and state the number of booklets on Asthma and Bronchitis you are prepared to distribute.

Dr. HAIR'S ASTHMA CURE Ltd., 104 HIGH HOLBORN, LONDON, W.C.1

Works : STANWELL, MIDDX.

Telegrams : "Asthma London."

Dr. Cassell's Tablets and **Germolene** The Aseptic Skin Dressing

**If you make a Window Show
these goods give 30% profit**

AND REMEMBER THAT TO DISPLAY THEM DOES
NOT MERELY MEAN AN EXTRA 5% DISCOUNT
IT MUST MEAN EXTRA SALES

This spring our advertising has been bigger and better than ever before. Our Sales Records have amazed even ourselves. The boom is still on. Now is the psychological moment to take full advantage of it. Hundreds of chemists are demonstrating every day in the week that it really pays to put Veno goods in the window.

**5 per cent. EXTRA DISCOUNT if you make a Display
 $\frac{1}{2}$ per cent. discount Cash in 30 days.**

Goods Carriage Paid to destination in free boxes.

Large size 30/- per doz., to sell at 3/-.

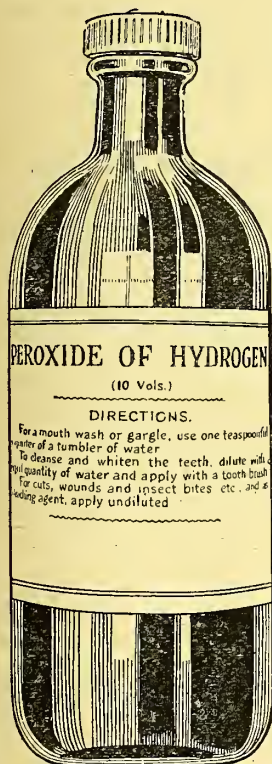
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4 oz.	" " " "	7/-	8/6
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SPECIAL PRICES FOR QUANTITIES.



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8 "	-	11/9 "	½ gall. tins	-	5/4 each.
16 "	-	21/- "	1 "	-	8/9 "

Aluminium Measure supplied with each bottle.

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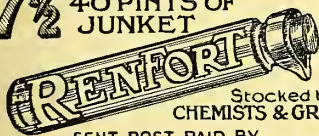
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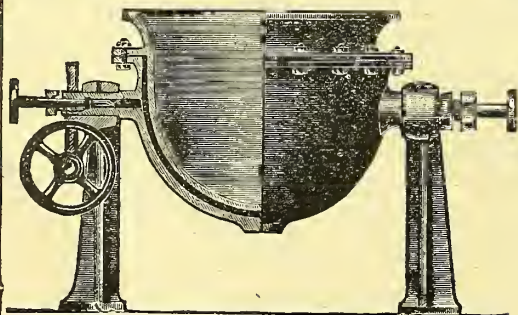
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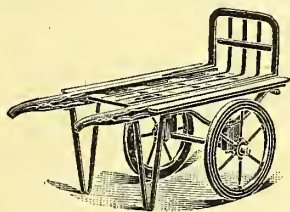
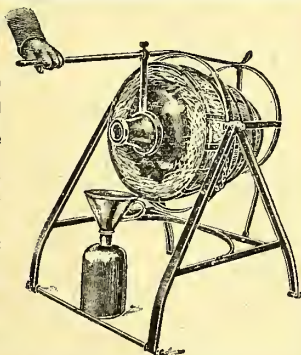
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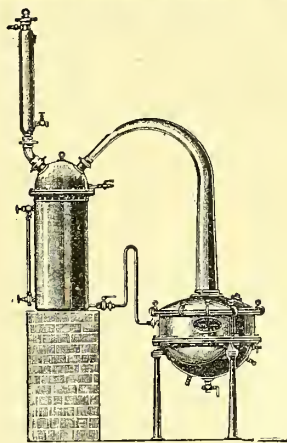
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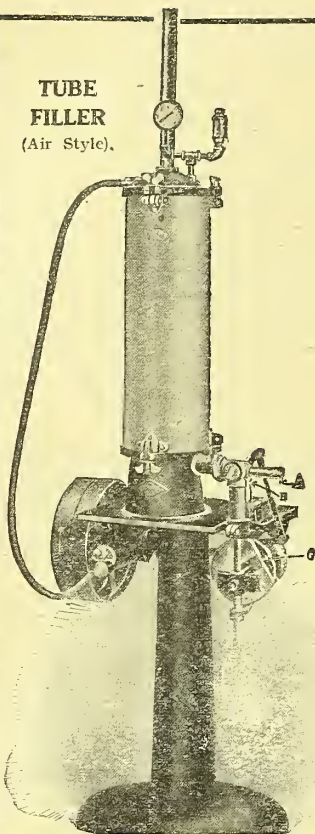
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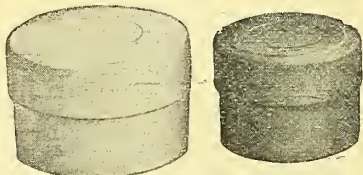
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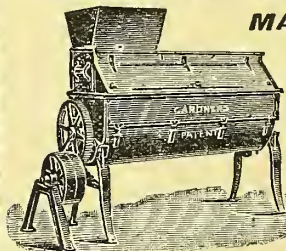
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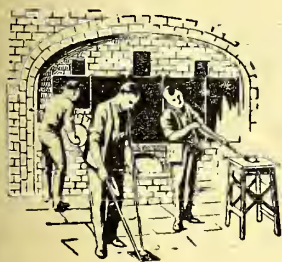
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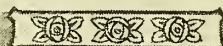
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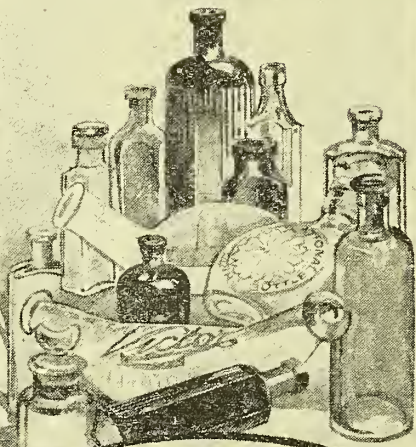
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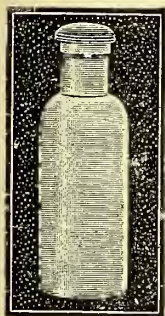
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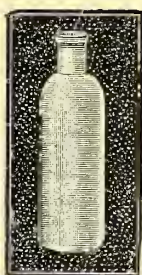
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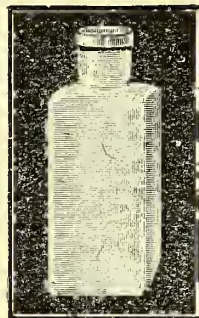
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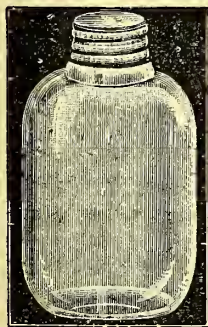
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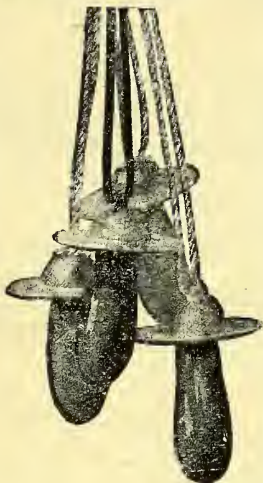
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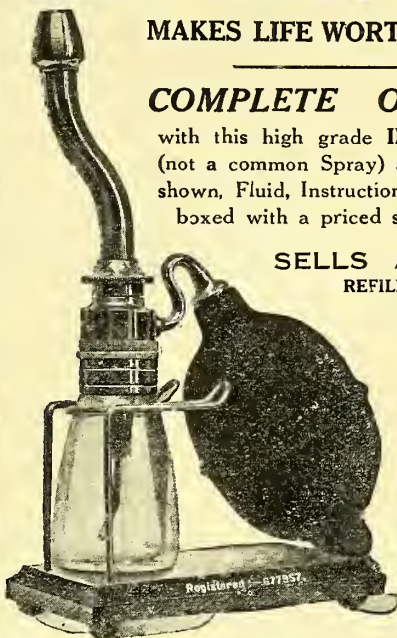
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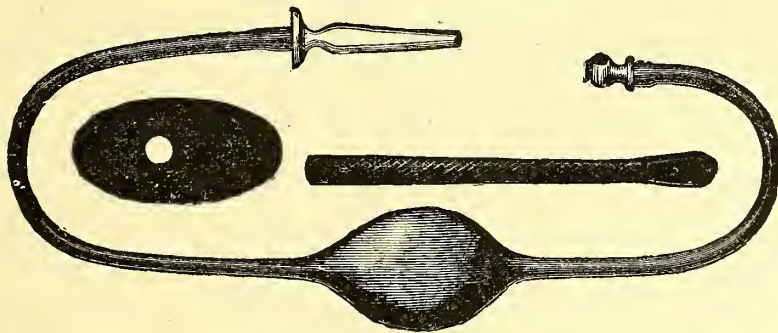


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(WONDERFUL VALUE)

20/- doz.



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No. 1252. The "SAFFRON," black polished, complete in card box, per doz. 20/-. This Enema is thoroughly reliable and will command a ready sale if brought to the notice of the public.

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Surgical Dressings

*Packed to suit
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*Special Quotations
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Clean—Hygienic—Safe.

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With inscriptions in any desired tint; also Plain or Embossed.

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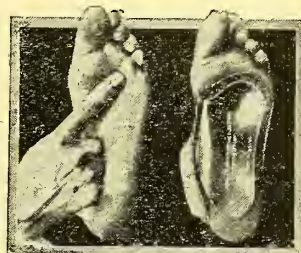
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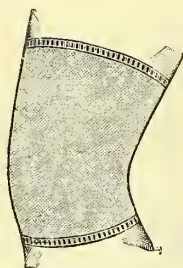
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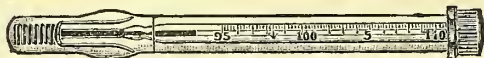
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Clinical Thermometers



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THE ACCOSON ASEPTIC CLINICAL.

The Thermometer is sterilised each time it is placed in the case, and the markings on the tube are not defaced. Any 4" clinical will fit the case.

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The beautiful elasticity (stretching to double the length) and yet firmness of the

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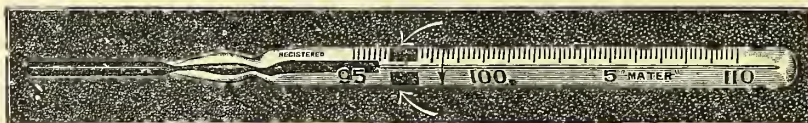
MAGNIFYING FRONT. NATIONAL PHYSICAL LABORATORY GUARANTEE.
EASY TO READ. EASY TO SHAKE DOWN.

This series of **Clinical** Thermometer is on the

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AN ADEQUATE MARGIN OF PROFIT BEING GUARANTEED

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PRICES OF THE "MATER" CLINICAL IN METAL CASES:—

Retail ... 2 min., 4/6; 1 min., 5/6; ½ min., 7/- each.

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Write for Prices of every description of **CLINICAL** and **OTHER THERMOMETERS**

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It is the only Clinical Thermometer with which a Kew Certificate is given Free.

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On P.A.T.A. at fixed retail prices. Produced under the direction of

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India Rubber Manufacturers,

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ESTABLISHED 1833.

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Window Display Assistance

for
those who sell
The Crusader



THIS coming winter the Hot Water Bottle business will enter on a new phase. For the first time a proprietary Hot Water Bottle selling at a fixed price will be the subject of a modern advertising campaign. The bottle itself—"The Crusader"—is better in design and in detail than any hitherto produced. And from your view point? There is only one size to stock—the most readily saleable size—15" x 9"; quick turnover is assured. You can offer with it a 12 months' guarantee. The advertising will aim at creating NEW users of Hot Water Bottles—and at sending them to you with the money. In addition we will help you with attractive window and counter display material—and, if

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"The Crusader" is made like a motor tyre, is reinforced throughout with strong fabric; has the neck and handles built into the bottle itself and by technical superiority lasts twice as long as any other rubber bottle. Another improvement is the cushion shape—another the eider-down-quilt softness. Without advertising the bottle would sell itself; with our campaign announcing its goodness and comforts a BIG public demand is certain. Prepare to supply this demand—and let your public know you can do so—Write to us now for full details, sample, and particulars of our whole trade proposition.

"The Crusader"

RUBBER HOT WATER BOTTLE

Protected throughout the world.

Awarded the Certificate of the Institute of Hygiene.
One size only to stock 15" x 9". Fixed retail price 6/11. The bottle to show—and to sell.

THE CRUSADER RUBBER CO., LTD.,
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Another "CRUSADER" Success! The Pure Red Rubber SPONGE. Immeasurably superior to the cheap foreign importations. Made in 4 sizes:

4½" x 3" x 1½"	retailing at 11d.
5" x 3½" x 2"	" " 1/8
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Write for details,
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Approved Sheep Dips (Liquid, Yellow Powder and Fly Paste), Fly Powders. Sheep and Bloom Colourings. Maggot-Fly Oil, Disinfectants (Liquid and Pink Powder), Weed Killers (Liquid and Powder), Embrocation, Seed Dressings.

Attractively packed under "own name." Prices on application.

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AS ADVERTISED.

33 1/3% PROFIT

AS ADVERTISED.

IDOF**INSECT BITE REMEDY**

Prevents Itching, Irritation & Swelling after an Insect Bite.

In Boxwood Cases, sold at 1/3; in Plain Brass Screw Cap Tops, 1/- each.
From **HERTZ & Co., Manufacturing Chemists, 9 Mincing Lane, London, E.C.3**

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The Best Hand-made Cigarette in a New Packing

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The Brand to Handle. 1/4 per box of 20.

Carriage paid on any quantity. ALL TOBACCO SUNDRIES.

Enclosure sent to Wholesale London Houses.

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'Ready Rat Relief' & 'Outem'

FOR RAT DESTRUCTION

"Solventen" for Cockroach destruction

Good Profits. Quick Returns.

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Watts' Embrocation, or Curb Bottle.

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Worm & Condition Powders.

Watts' Red Lotion.

Hair-Restoring Ointment

Edos, or Tasteless Purging Powder.

HARVEY'S**Great**

Protected Prices
(P.A.T.A.)

Remedies for the Horse**HARVEY'S**

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Parasiticide.

Thrush Specific.

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Of all the leading Druggists' Sundries Houses.

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Write for quotations

A wide, long band,
sticky on both sides.

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DOG MEDICINES
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SHAMPOO, and
LACTOL
(P.A.T.A.)**



These preparations command a ready sale, and are by far the largest advertised of any on the market. They are protected at prices that leave an excellent margin of profit for the retailer, and the terms on which they are supplied preclude any possibility of loss.

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in 1, 2, 4 and 7 lb. Tins and Casks,

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in 1 cwt. Bags.

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A QUICK SELLING LINE
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Every Wise Farmer
Uses



**Tipper's
COWS
RELIEF**

Carriage paid on orders of
40/- net. Postage charged on
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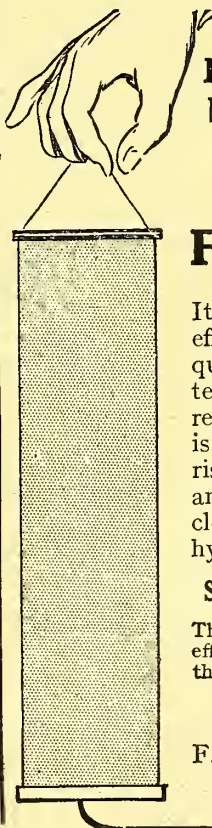
2/9, 6/6, 14/6, and
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Invoiced to the
Trade at

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Flies and Customers
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WASP FLYBAND

It is the best selling and most
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Sales Sure—Prompt Deliveries

The Wasp remains adhesive and
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38½% Profit—is it worth a thought?



This splendid profit of 38½% is the profit accruing from the sale of every tube of MOVOL—on the permanent selling basis established for Movol. Note the terms:

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Movol is a splendid line for Chemists.
Easy to stock—no trouble in sale—
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Advertisements are appearing regularly
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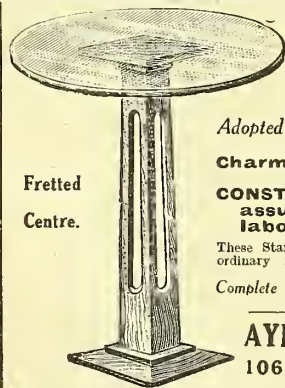
We pay carriage and supply suitable
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Adopted by Leading Window Dessers

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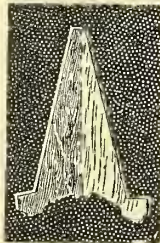
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labour more than halved.

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SHOWCARDS must be displayed



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X.1	4 inch	5/6 doz.
X.2	6 "	7/6 "
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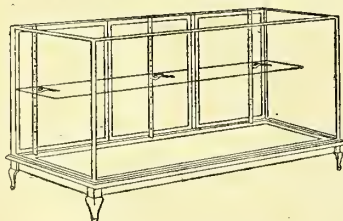


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6 ft. long, 3 ft. high,
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£14 10s.

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Send for a
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24 gross 6 and 8 oz. First Quality 23/6.

Carriage paid. Cash with order.

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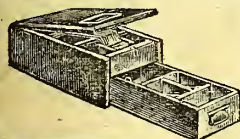
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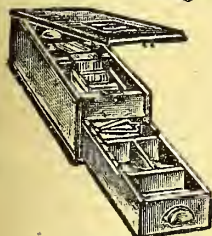
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Well-seasoned hardwood, Mahogany polished.
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Till Coils, 2½ ins. wide, 5/- dozen extra.



THE "EFFICIENCY" TILL.
Solid Mahogany, highly polished. Check action
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Alarm Bell. Spring Clip. Size over all,
18x9x7½ ins. Complete, packed **77/6**
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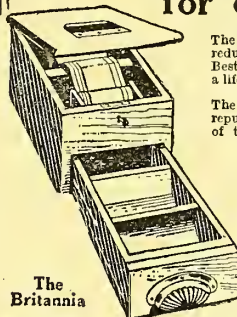
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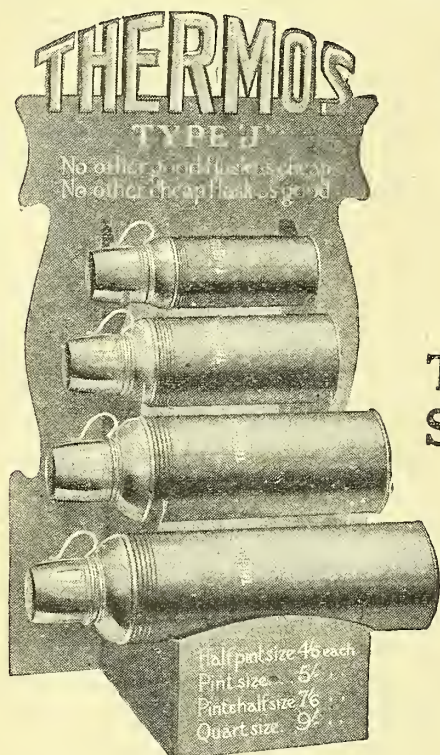
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THIS HANDSOME DISPLAY STAND WILL HELP YOU TO MAKE BIGGER SALES

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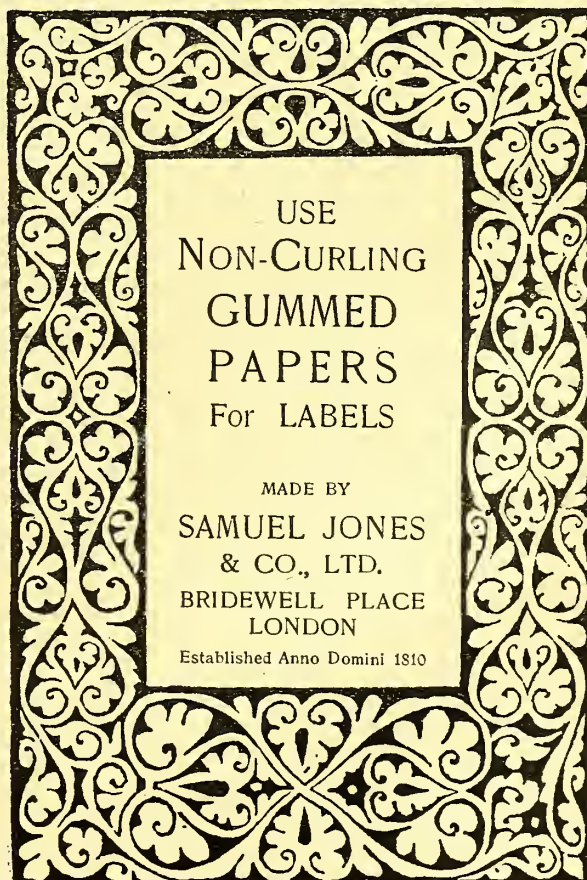
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This is the Pharmacist all forlorn,
With worried look and features worn,
With turnover down and profits gone,
Who oftentimes wished he'd ne'er been born.

This is the very same Pharmacist,
With a sideways look at May, Roberts' List,
With a dawning sense of what he had missed,
Who determined to live and not just exist.



This, the Pharmacist grown quite plump,
With a smiling face instead of the hump,
With turnover up; in the Bank a lump,
Who thanks that list for the sudden jump.

Moral.—Whosoever lacks a list should send a postcard.

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THE CHEMIST AND DRUGGIST SUPPLEMENT

42 CANNON ST.
LONDON E.C.4

JULY 28, 1923

This Supplement is inserted in every copy of The Chemist & Druggist.

THE CHEMIST AND DRUGGIST SUPPLEMENT

REVISED ADVERTISEMENT TARIFF.

Businesses Wanted and for Disposal, Premises to Let, Goods for Sale, and Agencies—6/- for 50 words; every additional 10 words or less, 6d.
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-HOLLOWAY (Near).—General Retail Business, with Dispensing; returns, upwards of £20 weekly, at good prices; double-fronted shop, well fitted and amply stocked; rent, per annum; house sublet at 22s. weekly; price £800.

-KENT (Good-class locality).—Retail and Dispensing Business; long-established; modern shop, plate-glass front, mahogany fittings; good house; held on lease; returns, £2,600, present terms, goodwill £400, stock and fixtures by valuation.

-LONDON, N.W. (Shopping District).—Retail and Dispensing Business; all good middle-class trading; returns, last year, £1,120; excellent opening for extension; gross profit, 30%; attractive, well-fitted shop, double-fronted; rent, £70; a suitable offer would be considered.

-KENSINGTON.—Very old-established Business; returns, per annum, about £1,200 per annum; scope for development or personal supervision; double-fronted shop, corner position; fitted and fully stocked; residence sublet, giving a profit of £18 yearly; price £1,050.

8.—YORKS.—Old-established Business, with Wine and Spirit licence, and excellent sale for own Proprietaries; gross receipts upwards of £4,000; net profit, £1,000; verified by accountant; modern residence, central position; the premises may be purchased, or lease will be granted; price £2,500, or with freehold £4,750; owner retiring.

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11.—SOUTH COAST (Fashionable Health Resort).—Retail and Dispensing Business; returns, £60 weekly, with scope for extension; well-fitted shop, double-fronted and fully stocked; the business is well suited to one requiring residence in a mild climate, price £3,000; stock and fixtures valued by vendor at £2,500.

12.—LANCASHIRE.—Cash Retail Business, Kodak Agency; returns, £1,600 per annum, under management; in the hands of a principal, a net profit of £400 would be shown; low rent and rate; lock-up shop; price £750.

13.—EAST COAST.—Good-class Cash Retail Business; returns about £2,000 per annum; gross profit, 40 per cent.; double-fronted shop, fitted in mahogany; good living accommodation, bathroom; long garden, greenhouse, vines and garage; further details on application.

14.—SOUTH-EASTERN RAILWAY (Main Line).—Old-established Business, with Optical connection; returns from Pharmacy, about £2,000, and from Optical about £700; net profit on Optical 60 per cent; lock-up shop, sight-testing room, and cellar; rent, £80; new lease, or freehold may be purchased; price to be arranged.

Messrs. O. & Co. desire to emphasize the necessity of a periodical statement of Account by which means alone Profit, the value of assets, &c., can be determined. Involving as this does the matter of Stocktaking and Valuation, it is often omitted and usually becomes the cause of confusion and loss.

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3.—SURREY.—Good-class, unopposed Village Business, under manager; returns £18 to £20 weekly; principal would quickly do £25 a week; lock-up shop, well stocked; price £600.

4.—DEVON.—Medium-class Cash Retail, in large town; returns over £1,100; net profit about £350; moderate rent, on long lease; good house attached; double-fronted shop, well stocked; price £750.

5.—LONDON, S.W.—Modern Cash Pharmacy, with Kodak Agency; present returns over £2,200 under manager; fine main road position; stands to do easily £3,000; price £1,600.

6.—LONDON (Central).—Good-class City Business, close to busy station; returns, £2,500 under manager; plenty of scope for extension; smart, modern Pharmacy, well stocked; price £2,200.

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3.—GOLDERS GREEN.—Finely situated Portrait Studios and Photographic Business; lease 8½ years, at £175 per annum; premises consist of basement, double-fronted shop, and 3 floors above. Full particulars on application to this office.

4.—OLD KENT ROAD, S.E.—Retail Cash Business; well situated; premises held on lease—4 years at £75; premises sublet at £50; turnover, approx. £25; full particulars on application.

5.—LIVERPOOL.—Good Retail Cash Business, established 40 years; average turnover £1,600 per annum; N.H.I., Kodak and Rexall Agency; tenancy quarterly; rent £40 16s.; house partly sublet at £26; low price for quick sale; fullest particulars on application.

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We desire particularly to draw the attention of Colonial and Foreign Subscribers to the fact that in cases where they require part agents or assistants, or wish to sell their businesses, an Advertisement in this Supplement, placed in every copy of "The Chemist and Druggist," should be the readiest means of helping them to their object. The tariff for such announcements is given under appropriate headings in the Supplement. Instructions and rates can be sent to us direct or through the advertisers' correspondents in this country.

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ENT, near the Coast.—Sound, ready-money Retail and Prescribing Business; returns over £1,200; net profit, about 100; well fitted shop, well stocked, good house, thorough air, low rent, long lease; price £600, or offer; every investigation. Apply, Berdoo & Fish, Valuers, 41 Argyle Square, King's Cross, W.C.1.

ANCASHIRE Seaside Resort.—High-class Chemist's Business with valuable freehold corner property; beautifully fitted well-stocked shop, doing good all-year-round trade; Kodak agency attached. For further particulars apply 140/12, Office of this Paper.

ONDON, S.W. District.—Good-class Dispensing and Family Retail, in busy shopping centre—on main road; Kodak agency; 19 years' lease, unexpired; returns £2,400; price £500, plus stock at valuation; option to purchase freehold licence above if desired. 141/8, Office of this Paper.

ONDON, WEST.—Busy thoroughfare; genuine Business; very low rent; nearly 14 years' lease unexpired; good living accommodation and garden; N.H.I. Dispensing; scope for resale and Photography; sound reasons for disposal; returns range over £1,500 at good prices. 142/36, Office of this Paper.

IDLANDS.—Old-established, neglected Chemist's business in thickly populated working and middle-class district; opposition nominal; general Drug Dispensing; splendid opening for Optical, Photography, Drysaltery; cash trade; commodious shop; long, easy lease; excellent opportunity and scope for selling business; fair stock, fittings, £650. 136/36, Office of this Paper.

ORTHAMPTONSHIRE.—Business in main street, near station, with every opportunity of considerable increase; runs under unqualified management £800, gradually increases; lock-up shop; rent £40; 14 years' lease; Kodak Agency; populous neighbourhood (opening for N.H.I.); no immediate position; stock, fixtures, lease, etc., £550. Come, see, and take offer. 29/922, Office of this Paper.

IEFFIELD.—Drug Store, established 1911; ill-health cause; double shop frontage, living accommodation, on main road, idle working-class district; qualified man with N.H.I. would sell; no opposition. Price, including goodwill, fittings, trade assets, etc., £400, or offer. Stock (low) at valuation. Possession on completion. Particulars, E. V. Whitworth, Watson's 1k, Sheffield.

RTISAN class Cash trade; Yorkshire inland town; lock-up; house near if desired; on lease; N.H.I. and Kodak agency; good storage; well-fitted; opening for Rexall and others; fullest particulars on interview; price £950, but prefer to dispose of half or two-thirds to Managing Partner who would have complete control. "Buchu," 143/14, Office of this Paper.

OR Sale, a Registered Dental Practice, well established for over 12 years, situated 7 miles from Birmingham in busy n., together with Branch Surgery at Clent, near Stourbridge, going concern; the only residential practice for 5 miles; grand office for extractions; price about £500; proprietor going abroad. Apply to A. E. Tolley, Dentist, Halesowen, Birmingham.

LD-ESTABLISHED Mixed Business in manufacturing town; best position; large N.H.I.; health the only reason for disposal. Inquiries to Lomax, Ph. Chemist, Church Street, Trowen.

HE owners of British Patents Nos. 142,738 and 156,329, both relating to the Manufacture of Para-Cymene, are desirous of entering into negotiations with one or more firms in Great Britain for the purpose of exploiting the above inventions, either by sale of the patent rights or by the grant of a licence to manufacture on royalty. Inquiries should be addressed to Messrs. Abel & Imray, Patented Patent Agents, 30 Southampton Buildings, London, E.C.2.

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THE advertiser, a qualified Chemist with many years' experience of the retail trade, and who calls on the Pharmacists of Birmingham, Warwickshire, Worcestershire, and Staffordshire, would be pleased to introduce one or two really good selling up-to-date Chemists' Side-lines. Buying Agencies entertained. Full particulars in strictest confidence. 29/926, Office of this Paper.

SOUTH AFRICA.—A Traveller representing a London Wholesale Druggist is returning to South Africa, and is open for other Agencies. Apply by letter with particulars to 29/927, Office of this Paper.

A. B. FROST & CO., Clifton Works, Beccston, Notts, require Commission Agent for whole of Scotland and North Ireland; Wholesale; Body Belts, Suspensory Bandages, Finger Stalls, Chest Protectors, etc.; references required.

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MANCHESTER or District.—Pharmacist with capital available requires Partnership, or interest in good, sound Business with part-time personal services, or would purchase good Business at present under managership; any particulars given treated in strict confidence. 141/20, Office of this Paper.

CHEMIST requires a good-class Cash Business, London or provinces; full particulars in confidence, of rent, rates, lease, accommodation, value of stock and fixtures, turnover; cash available. "F.", The Hollies, 44 Dunstable Street, Amptill.

PHARMACIST requires a good-class Business, London or suburbs. "H.", 26 Beckwith Road, Herne Hill, S.E.

SOUND Business wanted with turnover about £2,000; living accommodation; no N.H.I.; must be capable of extension and be well recommended; South Coast, Channel Islands, Isle of Wight, North Devon, or Cornish Coasts; management, view to succession, entertained. 141/39, Office of this Paper.

WOMAN Pharmacist will pay £5 for information (acted upon), suitable locality small Pharmacy, unopposed, sea or country; Home Counties or south preferred; no agents; will not buy; accommodation to rent; might consider partnership; if possible, land for poultry and dog breeding. Rennie, 23 Courtfield Gardens, London, S.W.

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BRIGHTON.—Qualified Assistant, gentleman, age 21-25, wanted at once to act as Junior; two kept. State salary required and references to Gwatkin & Son, 49 Grand Parade.

CITY, E.C.—Reliable, qualified Manager required, outdoor; City or West-End, experience preferred. Give full particulars. "Pharmakon," (P.C.B. 54/29), Office of this Paper.

GRAVESEND.—Wanted at once, an Assistant, about 25, preferably qualified; a quick and accurate Dispenser and really capable of taking charge for half a day; personal interview desirable; a capable lady of good all-round experience entertained. E. Millhouse, New Road, Gravesend, Kent.

HARROGATE.—Wanted, Junior Assistant, gentlemanly appearance, one accustomed to good-class dispensing business. Apply, with full particulars, Leo. Benjamin, 57 Cold Bath Road, Harrogate.

IPSWICH.—Apprentice or Improver wanted with knowledge of Photography; tall, well-educated youth of good appearance. Apply, stating full particulars, outdoor wages, and photo., to 142/14, Office of this Paper.

LIVERPOOL.—In few weeks' time, experienced Assistant, preferably qualified; first-rate Dispenser absolutely necessary; good Counterman, Window Dresser; mixed business, usual hours, and half day. All particulars, salary, in first communication, please. V. Strawson, Chemist, 25 Moss Street, Liverpool.

LIVERPOOL.—Assistant, unmarried (25-35 years), of good appearance and address for a high-class business; unqualified; accurate Dispenser and capable Counterman. State full particulars as to experience and salary required; position offers good scope to right man. 142/18, Office of this Paper.

LONDON.—Lady Minor required for Retail business with N.H.I. Usual particulars, when disengaged, age, salary required (outdoors), 140/24, Office of this Paper.

LONDON, E.—Assistant; qualified (male); smart Counterman and N.H.I.; hours, 8 to 8; alternate Sunday duty; age 30-35; salary, £4. Tate, 37 Roman Road, Bow, E.3.

LONDON, N.—Wanted, in a week, a qualified man at moderate salary; must be accurate and thoroughly conversant with Family Chemist business to manage and develop a neglected branch business. Apply by letter in first instance, giving full particulars, to Waterhouse, M.P.S., 187 St. Ann's Road, N.15.

LONDON, S.W.—Counter Assistant required with good experience in large Retail establishment; hours of work approximately 8.45 a.m. to 6.15 p.m., Saturdays to 1 p.m. Please state age, experience, and salary required. Personal interview necessary. Write Box 204, Sells Advertising Offices, Fleet Street, E.C.4.

LONDON, S.W.—Junior Assistant with good Dispensing experience required. Please give full particulars, references, and salary required. P.C.B. 54/20, Office of this Paper.

LONDON, W.—Smart, active Junior wanted; good and quick Dispenser. Full particulars of experience and salary required to H. N. Davidge, 11 Shaftesbury Avenue, London, W.1.

MANCHESTER ROYAL INFIRMARY.

ASSISTANT Pharmacist required, qualified, male. Apply, giving full particulars regarding age (not under 25 years), apprenticeship, experience (some Hospital experience preferred), and salary required, together with copies of two recent testimonials, to the General Superintendent and Secretary. July 17, 1923.

MANCHESTER.—Qualified Dispenser (Minor), lady or gent. Full particulars and salary required; state when at liberty to commence; permanent berth. "Nosliw," 141/25, Office of this Paper.

MANCHESTER.—Unqualified Assistant or Junior required; Dispensing, Counter and Photographic experience necessary; good berth for junior requiring further experience. Apply, stating age, references, and salary required, to 141/14, Office of this Paper.

MIDDLESEX.—Qualified Manager wanted, used to Family Business, N.H.I., Photographic, and Window-dressing. Apply, giving full particulars in first letter, of age, height, experience, references, married or single, and salary required to 143/21, Office of this Paper.

MIDLANDS.—Competent, qualified Manager required immediately. Reply, giving particulars of experience, salary required, and when at liberty, to "M.," 141/5, Office of this Paper.

SOUTH COAST.—A vacancy in September for a qualified Assistant to interest himself in the Pharmaceutical work of a high-class Pharmacy. Apply, giving full particulars and salary required, to "South Coast," 138/37, Office of this Paper.

WORCESTERSHIRE.—Young, energetic Assistant required for middle-class business; must be quick and accurate Dispenser and good Salesman. State salary required, with two recent references, and enclose photograph, to 141/1, Office of this Paper.

A COMPETENT Assistant, qualified or unqualified, accustomed to good-class Dispensing and Light Retail trade. Please state age, height, experiences, and salary required (Prebble & Bone, Chislehurst, Kent. Letters not answered in four days respectfully declined.

A VACANCY occurs in a high-class West-End Dispensing Business for a quick and accurate qualified Dispenser (male). Apply by letter to Frank A. Rogers, 1 Beaumont Street, W.

A ASSISTANT, unqualified, male; good-class business; smart Salesman essential. State age, salary, and full particulars of experience. Applications unanswered 7 days respectfully declined. Leonard Matthews, 722 High Road, Leytonstone, E.11.

A ASSISTANT, qualified or unqualified, required for a month or longer from August 7 (outdoors); good Counterman, Photography. State age, salary, etc. G. W. Sawdon, Chemist, 79 Lea Bridge Road, Walthamstow, E.17.

CAPABLE and trustworthy Assistant, qualified preferred, in small good-class business. Full particulars and salary required to Jabez A. Jones, 2 Four Elms Road, Cardiff.

CAPABLE Manager required for business in good-class district, age not over 40.—Apply, with usual particulars, 29/923, Office of this Paper.

COMPETENT unqualified Assistant, under 30, wanted immediately for Retail and N.H.I. Dispensing; hours 9-4 Wednesday half day, Sunday duty one in four. Apply personally or write, Austins, Ltd., Bermondsey Street, S.E.1. (near London Bridge).

EXPERIENCED unqualified male Assistants required. Apply by letter to Boots Pure Drug Co., Ltd., Station Street Nottingham.

IMMEDIATELY.—Young unqualified Assistant, preferably unmarried, well up in Dispensing, Window-dressing at Counter. Reply, stating full particulars and salary required, "A. E. T.," 741 Barking Road, London, E.

LADY Dispenser wanted, about July 28, by Doctor in Sussex. Apply, with usual particulars of experience, salary desired (outdoors), and references, to "Medicus," c/o G. E. Pearson Co., Manufacturing Chemists, 240 Goswell Road, E.C.1.

LOCUM, qualified, wanted, August 18 to September 1 inclusive; able to travel home daily preferred. Please state salary required and references. N. Brierley, Chemist, Greenfield near Oldham.

LOCUM wanted for fortnight, commencing August 13, Wenover, Bucks; state salary. 29/923, Office of this Paper.

LOCUM for small, high-class business, August 27 to September 8 inclusive. State salary (outdoors) and reference P. Fisher, 77 Royal Hospital Road, Chelsea, S.W.3.

LOCUM, qualified, required for one week on or about August 13; all-round knowledge required; in North London district. Apply, 142/29, Office of this Paper.

QUALIFIED Manager required for September in an up-to-date business, S.W. London; must be a smart Salesman with ideas and business ability, assist Window-dressing and Buying etc. State age, qualifications, experience, references, and salary required. Also required a capable lady Assistant; must be experienced Window-dresser with attractive and original ideas. State age, experience, and salary required to 141/12, Office of this Paper.

QUALIFIED Locum, reliable, wanted August 12 to 25. Particulars of experience, terms, etc., The Manager, Gateshead Co-operative Society, Drug Department, 16 High West Street Gateshead.

UALIFIED Assistant required at once to build up branch shop; must have good references; good Window-dresser and clerk at Counter essential; single; age about 25-30. Sayer, 68 onshire Road, Holloway, N.

UALIFIED Manager, married, required for middle-class Business in small Yorkshire town; knowledge of Photography and Agricultural business essential. Apply, giving full particulars as to age, experience, salary required, and when liberty. 142/1, Office of this Paper.

UALIFIED Locum wanted, August 5 to 18; Retail. Full particulars to "Victoria, S.W.," 142/22, Office of this Paper.

REQUIRED experienced, qualified Locum for Clapham, two weeks from September 3; also unqualified Locum for Addiscombe, two weeks August. Vincent, Chemist, 94 High Street, Clapham.

WANTED, Evening Assistant, gent., daily 6-8 p.m., mostly for Dispensing; must have had experience, and be clean, accurate, and methodical. Apply personally, D. Davies & 324 Caledonian Road, King's Cross, N.

WANTED, for September 24, smart qualified Senior Assistant; good Counterman and Window-dresser with knowledge of Photography essential. Please state age, not under 25, height, experience, salary required. John Dent, Chemist-Optician, 79 Square, Chesterfield.

WANTED, for evenings and Saturdays during August, Junior Assistant. Field, 241 Victoria Park Road, E.9.

WANTED, immediately, qualified lady Assistant, mainly Dispensing; some Counter work. Full particulars to S. Vards & Son, Chemists, Godalming, Surrey.

OUNG lady as Improver required in good-class business in Eastern Counties; short hours. State age, salary required, experience to 141/23, Office of this Paper.

WHOLESALE.

for 40 words or less; 6d. for every additional 10 words or less, prepaid.

ADVERTISER may if preferred have replies addressed to this Office, and forwarded on payment of an additional charge of 1/-.

LONDON firm, manufacturing a complete range of Disinfectants, etc., bulk and smalls, require experienced Representative calling on Chemists, Oilmen, etc., London district; optional commission terms; also vacancies certain provincial districts. State particulars of experience and connection. Replies, which will be treated in confidence, to 134/18, Office of this Paper.

GOOD side line is offered to suitable Representatives where not already represented; no samples to carry; Retail commission preferred. Give particulars of experience to 142/19, Office of this Paper.

REPRESENTATIVE, calling on Chemists throughout Lancashire and carrying one or two other lines, wanted by Proprietary firm. Please state commissions at present held, and whether the above territory is worked by car. 141/6, Office of this Paper.

REPRESENTATIVES required by Manufacturers of high-class Toilet Preparations, showing very good profit to retailers; must have good connections amongst Ladies' Hairdressers, Chemists and Stores; preference given to those representing their non-competing house; commission basis; most counties. Applicants must give full particulars of past experience, turnover and state terms required. State in confidence territory covered and lines carried. 110/4, Office of this Paper.

BLETS.—Young, capable man wanted immediately for Compressed Tablet Making (plain, sugar and chocolate coated); to devise his own formula; applicant must be willing to work in Pharmaceutical Laboratory in spare time. Give full particulars, stating wage required, in first letter to Goodall, House & Co., Leeds.

AVELLER required to call on Chemists (Wholesale and Retail), Perfumers, Drapers in country for sale of highest quality well-known French Perfumery, Combs, Brushes, Toilet Soaps, Hair Ornaments. P.C.B. 54/32, Office of this Paper.

AVELLERS calling upon Chemists and Grocers may increase their incomes considerably by selling a Proprietary Toilet Soap packed by an old-established firm; sample can be carried in waistcoat pocket. 28/895, Office of this Paper.

AVELLERS calling on Retail Chemists required to offer good saleable lines of Combs and Brushes. Apply for particulars, stating experience and district, to "P. B.," 138/13, Office of this Paper.

TWO Representatives required (one for provinces) with established connections amongst Wholesale Druggists' Sundriesmen and Surgical Instrument dealers. Reply, in confidence giving full particulars as to previous experience (and, in case of provinces, ground covered), also state salary and rate of commission expected. "Wholesale," c/o Orridge and Co., 56 Ludgate Hill, E.C.

WORKING Chemist Manager to take full charge; well up in the manufacture of foodstuffs; experienced in such lines as Jellies, Table Dainties, Lemon Curd, and similar products; must have real Chemical knowledge and experience; a first-class man will be liberally dealt with; the business is located in the North of England. State age, qualifications, and fullest details, in the strictest confidence, 29/925, Office of this Paper.

[COLONIAL, INDIAN AND FOREIGN.]

BRUSSELS.—Messrs. C. H. Delacre & Co. require an Assistant for their Retail Pharmacy in Brussels; good experience is necessary, but qualification not essential. Please apply, giving full particulars and enclosing photograph if possible, to "F. W. G.," Allen & Hanburys, Ltd., Bethnal Green, E.

CALCUTTA.—Advertising man, experienced, wanted for Calcutta; knowledge Drug trade preferred; unmarried; salary commencing rupees 450 month. Apply with full particulars of experience to "E. H.," 29/921, Office of this Paper.

NAMES AND ADDRESSES.

When sending advertisements for any of the sections in this Supplement, advertisers—as a guarantee of good faith and not necessarily for publication—should always give their names and addresses. It sometimes occurs that this rule is not followed and delay and disappointment ensues. Strict attention to this detail will be appreciated.

SITUATIONS WANTED.

RETAIL.

[HOME.]

2s. for 18 words or less; 6d. for every additional 10 words or less, prepaid.

A.A.—CAPABLE Pharmacist, 35; single; energetic; references; permanent or temporary; disengaged August 6. 1, Crane Street, Pontypool.

A.—ASSISTANT, 30; unqualified; 16 years' experience, Dispensing, Counter, Window-dressing, Photographic and Surgical; capable of taking charge; excellent references; kindly state salary. 140/19, Office of this Paper.

A.—DISENGAGED until August 19; unqualified Manager, Locum; age 44; married.—"H. C. B.," 345, Woolwich Road, Charlton, S.E.7.

A MINOR Student requires part-time; S.W. London preferred; good references and experience. 140/15, Office of this Paper.

A QUALIFIED woman, disengaged latter part of August; Retail experience; excellent references. 143/22, Office of this Paper.

A THOROUGHLY competent Assistant (38); splendid all-round knowledge of retail; London and Provincial experience; well recommended; desires change; present situation three years. "Scotsman," 140/40, Office of this Paper.

A S Manager; qualified; 30; Photography, Window-dressing, etc.; Lancashire or Yorkshire preferred. 141/38, Office of this Paper.

A S Locum or permanent; single; tall; 39; well educated; good address; unregistered; 20 years' first-class London and provincial experience; disengaged. G. L. Clutterbuck, 52 Thane Villas, Islington, N.7.

A SSISTANT, passed Part I., requires further experience in Dispensing; moderate salary. 136/2, Office of this Paper.

A SSISTANT, male, 23, unqualified; private and N.H.I. Dispensing; knowledge of Photography, Counter; excellent references; Manchester district. Apply, "Statim," 141/2, Office of this Paper.

A SSISTANT; unqualified; 32; Dispensing and Agricultural experience; permanency or temporary; disengaged end July. "Pestle," 13 Austin Avenue, Stockton-on-Tees.

ASSISTANT; unqualified; single; varied experience; reasonable hours; disengaged. Jones, 10 Barclay Road, Walham Green, Fulham.

ASSISTANT; temporary, permanent; City and West-End experience; disengaged; *forte*, Dispensing, Prescribing, Manufacture. "Abbott," 7 Quality Court, Chancery Lane, W.C.

ASSISTANT, 30; unqualified; married; 12 years' Retail experience, desires change; last two situations cover 9 years; excellent references; disengaged August 31; Midlands preferred. "Talu," c/o Y.M.C.A., St. James Barton, Bristol.

BOOK-KEEPING and Clerical Work; day or evenings. Apply "X. Y. Z.," 109/34, Office of this Paper.

BRISTOL or near.—Qualified, 22; 7 years' good all-round high-class experience, Dispensing, Retail, Photographics, and Agriculture; capable of taking charge; two years in Bristol. Turner, Chatsworth Villa, North Villa Road, Hereford.

CAPABLE woman Dispenser-Book-keeper wants post with Doctor or Chemist; excellent references and experience; Locum or permanency. 138/29, Office of this Paper.

CHEMIST-OPTICIAN (both qualifications) desires Managership or other responsible position (Optics not essential); 25; tall, capable, and trustworthy; excellent references. "Chemist," Holmwood, Park Road, Forest Hill, S.E.23.

DISENGAGED.—Permanency or Locum; unqualified; good, all-round experience; Agricultural; seaside or country; abstainer. Henderson, 61 Castle Street, Kendal.

DISPENSER or Manager; qualified; middle-aged; experienced; abstainer; London preferred. Ellinor, 77 Atlantic Road, Brixton, S.W.9.

DISPENSERSHIP or Cover; qualified; single; 50; all-round experience; small salary. "Chemist," 23 Wellclose Mount, Blackman Lane, Leeds.

ELDERLY Pharmacist, healthy, active, wants post. Brown, 49a, Pecker's Hill Road, Sutton, St. Helens.

FREE now; first-rate Dispenser, capable being left in charge; nine years' experience; requires permanency; good Counterman; able to dress windows, etc. Write, Hill, Denehurst, High Street, Nuneaton.

JUNIOR Assistant, 20, requires post; 5 years' good experience, Dispensing, Counter, etc.; tall; excellent references. "H. L.," 6 Savile Road, Chapeltown, Leeds.

JUNIOR requires position, City or West-End; sound training; good experience both localities; knowledge of French and Continental Dispensing. P.C.B. 54/31, Office of this Paper.

JUNIOR, 22, seeks part- or whole-time situation, end of August or September; good, all-round experience. 143/7, Office of this Paper.

LADY, Hall certificate, desires post with first-class Chemist or Doctor. P.C.B. 54/18, Office of this Paper.

LADY Dispenser, Hall, desires post; experience with Doctor and Chemist. Apply Thomas, 80 Pwllgarth Street, Kenfig Hill.

LADY Dispenser (Hall); good experience (Panel, Book-keeping, Typewriting, etc.); Locum or permanency; free after July 29. M. C. Ashford, Gillingham, Beccles.

LADY Assistant; London; 3½ years' experience, Counter, Stock, Photography; good reference. 142/23, Office of this Paper.

LOCUM or permanency, qualified; all-round experience; excellent references; disengaged after August 11. "Locum," 38 Battersea Park Road, S.W.

LOCUM, permanency, 27; London, provincial experience; excellent references; disengaged August 6. Nethercott, 64 Thornsbeach Road, Catford, S.E.6.

LOCUM, now disengaged until August 13; good Counterman and Dispenser; moderate terms. "Qualified," 66 Vancouver Road, Forest Hill, S.E.

LOCUM, Major, 49, abstainer; temporarily out of business; experienced all branches; highest references; disengaged August 6 to 23; any district; country preferred. Dyson, 6 High Street, Knighton, Radnor.

LOCUM or otherwise; middle-aged; thoroughly competent worker and successful in increasing returns; accustomed to management; highly recommended; abstainer; unqualified. "C. H.," 131 Mount View Road, N.4.

LOCUM.—Vacant dates from now to August 11 inclusive; Minor; elderly; good references. P. Smith, 127 Capel Road, Forest Gate, E.7.

LOCUM; qualified; middle-aged; male; free now; Shop Institution; moderate salary; London district preferred. 142/31, Office of this Paper.

LONDON.—Young lady desires change; 5 years' first-class experience, Dispensing, Counter, Photography; disengaged August. 143/5, Office of this Paper.

MANAGER, qualified, required, for good-class suburban Business. Apply, "Pharmacist," 140/38, Office of this Paper.

MANAGER, M.P.S., D.B.O.A., desires change; would enter Partnership, or take an interest. 143/15, Office of this Paper.

MANAGER or Managing Assistant, view Partnership succession; best-class experience; ample capital; London preferred. Particulars to "Confidential" (P.C.B. 54/33), Office of this Paper.

PHARMACIST, 46, requires position of trust in good-class Pharmacy or Office; good Counterman, and able to manage and control; permanency if suitable. 141/26, Office of this Paper.

PHARMACIST, at present occupying position as Manager, desires change; reason, more scope for ability and energy required; 25 years' varied experience, first-class Dispensing London and best provincial houses; sober; energetic; strict disciplinarian; thorough knowledge Photographics; Managership Senior under gentleman who would offer a fair salary commence, with prospects for a real worker; references in our interview only. 143/6, Office of this Paper.

QUAKER Doctor desires place daughter of 19, passed Part M.P.S., with scholarly Pharmacist or Chemist-Dent Institution, or others interested in higher education of women Pharmacists; facilities for study. State terms, hours, when premium, salary, conditions satisfying latest official regulations for Part II.; Western area. Sutherland, 32 St. James' Avenue, Ealing, W.

QUALIFIED lady desires post with Chemist or Doctor; district. Burgess, 14 Medley Street, Castleford.

QUALIFIED, excellent, London experience, requires position as Manager of a good Business. "Permanency," 141/1, Office of this Paper.

QUALIFIED (27), 5 ft. 10 in., ten years' experience London and Provinces; accurate Dispenser; splendid general knowledge of Counter and shop routine; at liberty August "Chemist," 86 Cadogan Terrace, Victoria Park, E.9.

QUALIFIED (24), all-round experience, desires a change East Kent or Leicestershire preferred; not essential. 140/36, Office of this Paper.

QUALIFIED Assistant, experienced Dispenser, requires permanent or temporary post; London preferred. P.C.B. 54/30, Office of this Paper.

QUALIFIED, 32; wide experience; temporary or permanent at liberty. Lawrence, Market Place, Loftus, Yorks.

QUALIFIED; middle-aged; active; varied experience; references; moderate salary; disengaged August "Chemist," 18 Rawdon Road, Maidstone.

QUALIFIED Assistant, 29, requires permanency; 11 years' varied experience, Dispensing, Manufacturing, Photography; good Prescriber; abstainer; single; good references. 142/16, Office of this Paper.

RETAIL experience required by Lady Dispenser (Hall certificate) wishing to study for Minor; S.W. London preferred disengaged end of August. Gramshaw, 1 Caburn Road, Hove, Sussex.

UNQUALIFIED, 33, height 5 ft. 10 in.; Locum or permanency; 16 years' good all-round experience; capable taking charge; excellent references; disengaged. "Energet," 55 Granville Road, Childs Hill.

UNQUALIFIED requires evening post, Dispensing Counter; reliable; easy access Central London. 142/1, Office of this Paper.

YOUNG lady, suitable as Cashier, Clerical work, F. Counter; accustomed to brisk store business; disengaged shortly. Stuart, 70 Brecknock Road, Tufnell Park.

WHOLESALE.

for 18 words or less; 6d. for every additional 10 words or less, prepaid.

The ADVERTISER may if preferred have replies addressed to this Office, and forwarded on payment of an additional charge of 1/-.

CAPABLE man; disengaged; 15 years' London Stores experience; Wholesale or Retail; Stock-keeper or Counter; commercial and organising knowledge. R. Tyler, 84 Montholme Road, Wandsworth Common.

REALLY capable Representative, absolutely trustworthy, well-known and liked by the Chemists in Essex, Kent, Surrey, Sussex, and London suburbs, desires change, with opportunity of making good money; five years present position, age 35, tall and of good address; most excellent references; wishes represent house of repute and standing, proprietary preferred, would consider two or three really good lines on small salary, expenses, and commission basis. "G. L.," 139/39, Office of this Paper.

BACTERIOLOGIST and Pharmacist, 28; 5 years' war service; M.P.S.; 5 years' Laboratory experience in Bacteriology; willing to take any post. M.L. 1456/23, Office of this Paper.

CHEMIST, fully qualified, Wholesale and Retail, desires post as General or Works Manager where a first-class knowledge commercial and practical routine is required. P.C.B. 54/34, Office of this Paper.

EX-OFFICER, 34, desires post as Business Manager, Organiser, Representative, Salesman, Interviewer or General Secretary; thorough knowledge of Chemistry, Photographic equipment, Surgical Goods, etc.; is willing to take any post. L. 19088, Office of this Paper.

EX-OFFICER, 33, single, 4 years' war service, decorated, qualified Chemist and Druggist, 7 years' Retail and 3 years' Manufacturing experience, French, German and some Italian, desires appointment, Wholesale or Manufacturing; home or abroad. M.L. 1995/23, Office of this Paper.

EX-OFFICER, 33, married; educated Public School; wide experience and connection amongst Doctors, Hospitals, Clinics, Chemists (wholesale and retail); knows Continental, Indian and Egyptian markets, well in this connection; has also done experience in this country; thorough knowledge display advertising and exhibition work all branches; good knowledge office routine, administration, organisation; willing to take post Traveller or Representative, home or abroad, preferably abroad, or is willing to take any post for which qualifications are suited. M. L. 64214, Office of this Paper.

GENTLEMAN, 15 years' first-class experience in high-class Pharmacy, anxious to represent Wholesale Druggists; good personality; sound knowledge of Therapeutics; plenty of push. "Insulin," 140/26, Office of this Paper.

GOOD business man (own shop for 13 years), tactful and pushing, requires position as Traveller or Assistant Traveller in good house; 28 years Wholesale and Retail; moderate salary. 140/13, Office of this Paper.

LABORATORY or Wet Counter Assistant; 8 years' experience; unqualified; excellent testimonials. Rennison, 2 Duke Street, West Hartlepool.

MEDICAL Propaganda.—A successful Expert, with 25 years' Medical and Hospital Propaganda experience throughout K., with all the resulting reserve knowledge that an intelligent enthusiast stores up during that period, is open to consider a suitable additional line; commission only, or with part expenses. 140/25, Office of this Paper.

PERFUMERY and Toilet Preparations.—Manufacturer; 20 years' experience in all branches of the trade; disengaged. "1", 1 Gillingham Street, Victoria, S.W.

REPRESENTATIVE, London connection, Chemists, Hairdressers, Stores, now at liberty; commission terms entered. "Traveller," 17 Old Kent Road, S.E.1.

W.O. Exporters.—Advertiser seeks engagement in Office, Warehouse or Travelling; 6 years' experience in South America (Chile); fluent Spanish; very good knowledge of Laboratory work, Photographics and Accounting. 135/16, Office of this Paper.

Price lists, trade circulars, samples, and printed matter in no case be forwarded, the Box numbers being intended exclusively for specific answers to particular advertisements. The Publisher reserves the right to open or refuse to forward any communications received which he may consider contrary to this rule.

MISCELLANEOUS.

10s. for 60 words; 1s. for every additional 10 words or less.

CHEMIST'S Fittings (second-hand).—Ranges of Drug Drawers, Shelving, All Glass Counters, Centre Cases, Window Fittings of all descriptions. D. MATTHEWS & SON, Chemist Fitters, 14/16, Manchester Street, Liverpool.

CHEMIST'S Second-hand high-class Fittings, recently removed from West-End Pharmacy, including Drug Fitting, Wall Cases, Counters, etc.; bargain. H. MILLS & SONS, SHOP-FITTERS, 163-5, Old Street, LONDON.

SECOND-HAND CHEMISTS' FITTINGS.—We have an exceptionally fine selection of these in all sizes; prices are right, and goods are in first-class condition; we shall be pleased to supply particulars and prices. Call or write, RUDDUCK & CO., 262 Old Street, London, E.C.2.

SHOP FITTINGS.—Large quantity of Showcases, Fittings ready for use; Silent Salesman, All-glass Counters, Dispensing Screens, Oak Window Fittings, etc. PHILIP JOSEPH & SONS, LTD., 93 Old Street, London, E.C.1.

GARDNER'S "D" Rapid Sifter and Mixer, double pulleys; cost price £61; will accept £50, i.o.r.; never been used. THE ARTHOL MANUFACTURING CO., LTD., Sealand Road, Chester.

MAHOGANISED FITTINGS.—Complete Drug Fittings, 12 ft. x 10 ft. long; 9 ft. Glass Case Front Counter; Dispensing Screen and Counter, 6 ft. long; Wall Cases, 9 ft., 8 ft., and 5 ft. 6 in. long, 8 ft. 6 in. high; Perfume Case and Desk; two 4 ft. Nest Counter Drawers; shop soiled; low prices; also two Silent Salesmen, 5 ft. 10 ins. high, with three shelves. GEORGE COOK, Shopfitter, 29 Macclesfield Street, City Road, London.

NEARLY 5,000 "Aurophan" Isolating Flasks, highest grade, to be sold as one parcel; samples may be inspected. 139/11, Office of this Paper.

STOKES Tablet Machine for sale; Stokes "O" Tablet Machine, condition as new; two Sets Dies and Punches, $\frac{3}{8}$ in. and $\frac{1}{2}$ in. flat. Apply, 28/901, Office of this Paper.

LIMITED COMPANY FORMATION.

Before placing your Company in other hands, get my quotation. I specialise in Chemist and tradesmen private companies and quote inclusive charge; no extras. A. B. Slack, 180 Garston Old Road, Liverpool.

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12x 2-oz. Cylindrical Glass Measures, verified, 8s.; post free. Duck & Son, Chemists, Cardiff.

SANTONINE, fine, dry crystals. 1 oz. sealed bottle; offers. Masterson, Sherborn-in-Elmet, Yorks.

SOUTHALL'S "Materia Medica," full set, with key and map; any reasonable offer. Clarke, 162 Hampstead Way, Golder's Green.

CAMERA, Butcher's Folding P.C. Camera, Ensign Sector Shutter, Rechimat Symmetrical Lens, solid leather carrying case, telescopic tripod, bargain, £6. "Chemist," 238 Washwood Heath Road, Birmingham.

RARE Book Bargains for Standard Works.—Acton on the "Reproductive Organs"; Ramsbotham's "Obstetric Medicine and Surgery," illustrated; the "Theory and Practice of Obstetrics," Cazeau and Tarnier, coloured plates; "Operative Surgery," Bernard and Huette, illustrated; "Venereal and Generative Diseases," Hargreaves; "Animal Physiology," Cleland, illustrated; Cassell's "Family Physician," 4 vols.; "Standard Physician," by Crichton-Browne, Broadbent, etc., 3 vols.; Chavasse's "Wife's Advice," "Minor Ailments," B. & C.D.; mostly illustrated, and mostly new condition; best offer accepted for either; must be cleared. Griffin, 139 Monument Road, Birmingham.

WANTED.

STUDENT (19) commencing study at Bloomsbury Square in October, wishes to meet another to share apartment at one of the Y.M.C.A.'s in that locality. Franklin, 23 High Street, Abingdon, Berks.

SECOND-HAND Matmed Set. Write to 143/10, Office of this Paper.

PHARMACEUTICAL Books wanted; send priced list. Gower, Bookseller, 41 Voltaire Road, Clapham.

RADIUM SALT, pure of Residues, old Applicators, etc. Apply Harrison Glew, Radium Laboratories, 156 Clapham Road, S.W.9.

SECOND-HAND VACUUM PUMP; Sugar and Drug Mill; Ointment Spinner; Emulsifier; Hydro-Extractor; Steam Jacketed enamelled Pans; Earthenware Mixing Pans. 141/10, Office of this Paper.

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